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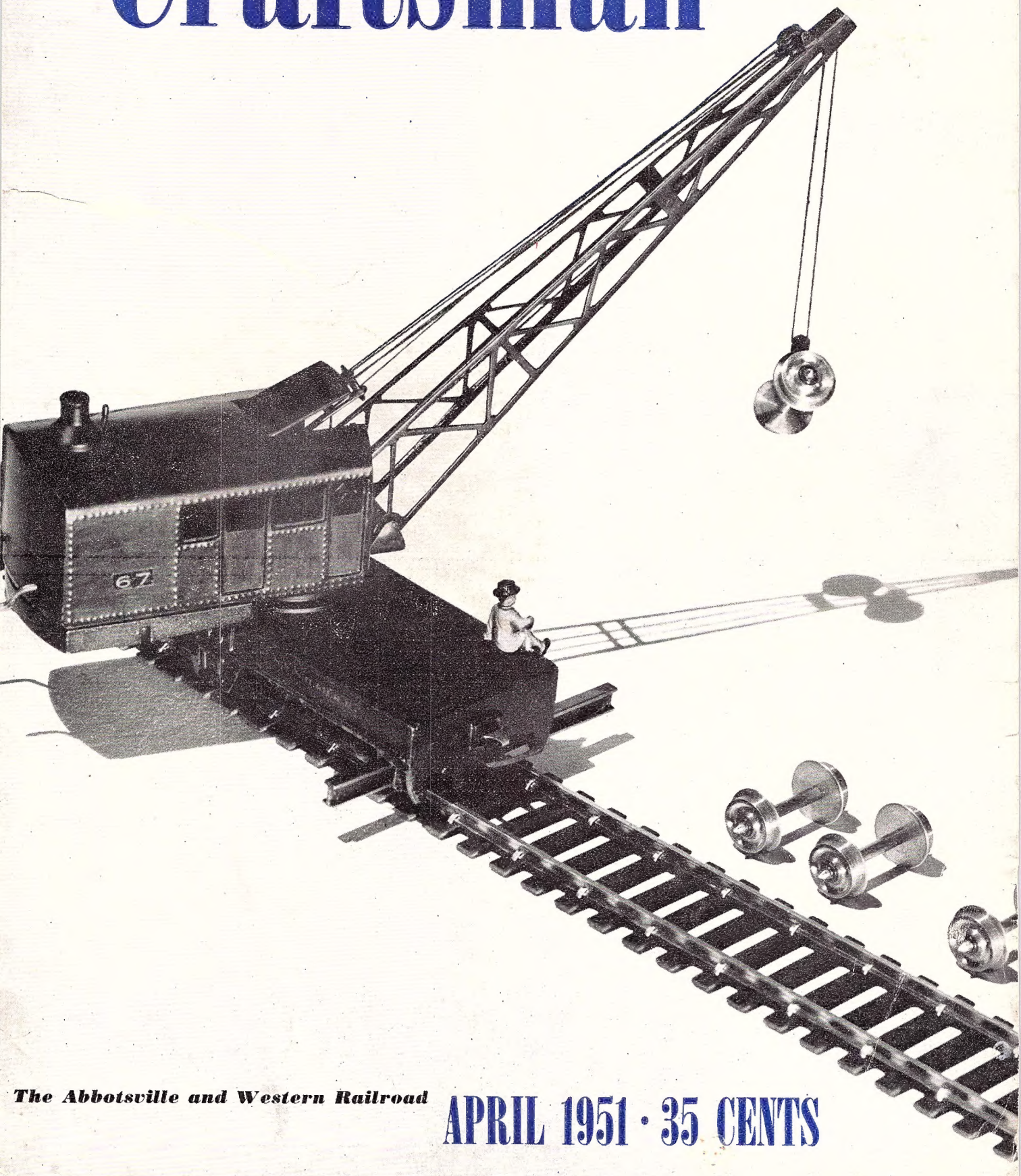

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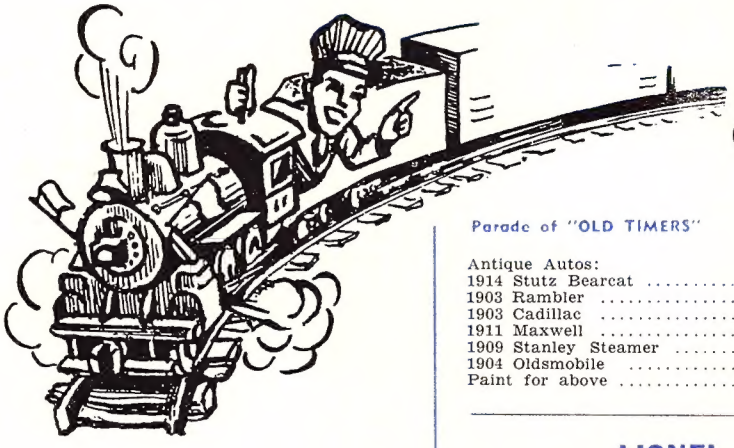

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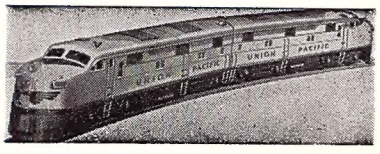

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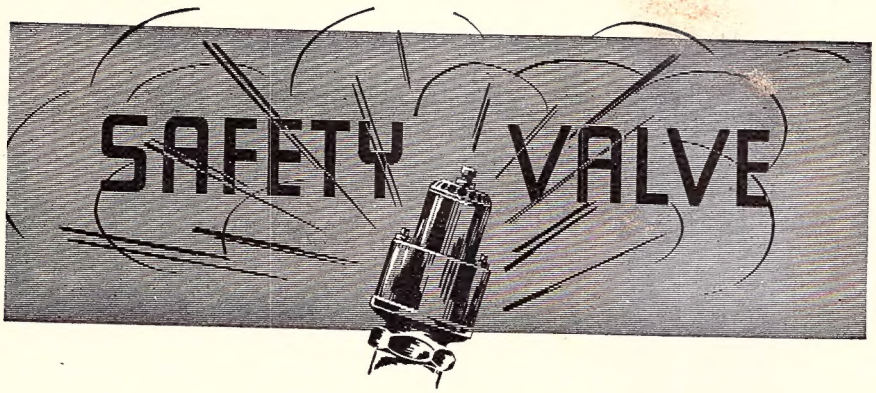

For Good Rail Joints

In the article on building a double-gauge switch in the February issue, Bill Schopp states that "many fish plates sold nowadays are too tight for the rail and must be forced on." In making this statement, I believe he errs in two respects: (a) the rail joiners or fish plates sold now are most commonly Atlas make. These have just the right fit for the rail use on the present Atlas Track, but for some other rail, including old Atlas track (with wide staples), I find they are tight. They are also tight for Umpco track. While both types of rail are the same height, the older pattern has a wider base, hence the rail-joiners are quite tight. (b) As for me, I prefer these extra tight rail-joiners to give better current carrying. In fact, when I use the newer model rail, I also solder my rail joints to insure perfect conductivity, although I know this is not absolutely necessary. With a little filing, it does give a smooth right of way for trains . . . *N. D. Anderson, Silver Springs, Md.*

Let's Call A Truce

It's amazing how many people with big layouts and several trains are completely unaware of the fact that there are magazines devoted exclusively to the hobby of model railroading AND the fact that it is possible to get kits to build locos and cars. I'm not speaking just of GI's like myself or people in isolated sections of the country, but people living in the bigger cities. Let's not waste out energy bickering amongst ourselves but use it to inform our friends and co-workers of the best of all hobbies . . . *Sgt. C. W. DeLeuze, Camp Rucker, Ala.*

Prescription For Rust

Re: Mr. John Allison's item on page 7, Feb. issue. He wants rust, I got it! Rx: Wet Basement! I have had many oxidized spikes get so rusty that you had to pry 'em apart. A few minutes in water won"t do a thing, but give any part a month in damp and it will either rust or corrode. Yours for *less* rust . . . *Bob Mason, Holland, Mich.*

Give S Gauge A Break

Let's see. at this time there are 17/64, ¼. S, OO and HO gauges, not just HO. I don't down HO gauge, I once built in that scale myself and I'm not afraid of its small size or the detail that is possible with the small gauges. I'm a watchmaker employed by the U. S. Government. There are a lot of fellows building S gauge now, why not give them a break. It's a good scale even though its taking time to get started. 14 years ago I was building HO equipment and the O gauge boys told me I was playing with paper dolls. I couldn't get HO material then and had to build a lot of the stuff myself. Now that's all I can buy here in Washington. Seems as though the model stores feel the same way about it . . . *H. R. Aeberli, Arlington, Va.*

We Aim To Please

I really do not know what these old timers would do if it were not for the writings of Mr. Hertz. He is very badly needed for it is the spirit of his articles which make us old timers look back in the days that are past. I hope he keeps the good work agoing.

Other comments in the safety valve articles I will say this much: it reminds me of the old time story of the man, the boy and the donkey. They were traveling the highroad and the man was riding the donkey and the boy walking. A person along the road said see that lazy man riding and the boy walking! Then the man got off and the boy got on and the comment was the lazy boy riding and the old man walking. Then the people said the donkey was all tired out and should be carried by the man and boy. Well, they carried the donkey and when going over a bridge the bridge broke down and drowned the donkey. So the old adage is this: To try and please everyone you please nobody and lose your Donkey in the bargain!

As long as we have model railroads, we will have a lot of persons with a grouch, they'll find something to kick about. I hope this will clear up some of the comments . . . *Geo. E. Brink, Belleville, N. J.*

(Eds Note: We'll take a chance with our donkey and listen to all comments, criticisms and suggestions. Let us know how we can serve you better.)

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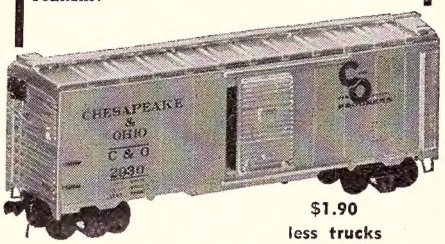

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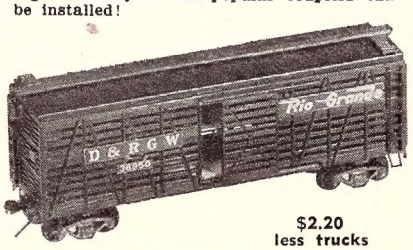

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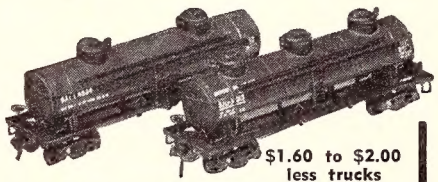

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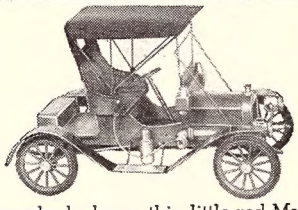

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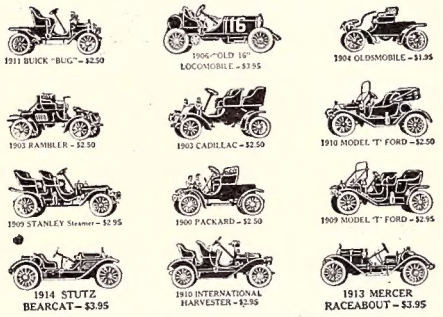

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THIS MONTH'S COVER depicts an exceptionally well-detailed derrick car in HO gauge constructed from scrap materials by Lewis Austin, Rockville Centre, N. Y. The crane and pulley actually operate; an example of fine modeling work. Other materials were furnished by Model Railroad Equipment Corp., 23 W. 45th St., New York City. Photo by Jerome Conkling.

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Forty Foot Stock Car
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New York Central Mogul
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Double Cab Work Car

MAY
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Terminal Throat
Pacific Electric Car

JUNE
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JULY
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MAY
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AUGUST
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Camouflage Operating Space
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So You Want Old-Timers

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A Railway To The Clouds

A fascinating bit of prototype operation that lends itself well to modeling. In miniature, it can be added to conventional steam roads and still not take away trackage rights from present equipment.

by WARREN B. CRATER

THIS title has been used with great accuracy to introduce sketches of the most unusual railroad in America. Possibly unique would be more appropriate. Actually there is no word or phrase that could even basically describe this railroad oddity. A complete set of pictures can not present a full realization of the accomplishment of the builders and present operators.

We present here a word and picture story which we feel will afford a high degree of accurate description. But I state with personal assurance and experience that one must see and ride on the cog road to gain a real knowledge of railroading on a ladder extending from the base to the summit of New England's highest peak.

Think back, if you will, to what development had taken place to 1866 on the railroads using friction and weight adhesion to effect propulsion, then realize how incredible the invention of this cog road, with grades up to 37% and the locomotive to work its trains, must have appeared to the people of that age. We can visualize quite readily, that Sylvester Marsh was very much alone in this enterprise and was quite likely the butt of puns and opposition. It is also noteworthy that he devised a means of reversing the engine and allowing the pistons to pump air and water through the cylinders to defy gravity when descending the steep grade. This method of holding trains on the down trip, is still in use today and has proven 100% effective.

The road was completed in 1869 and the first train was run to the summit with the original engine, old "Peppersass," which now is preserved as a museum piece, and very deservedly so.

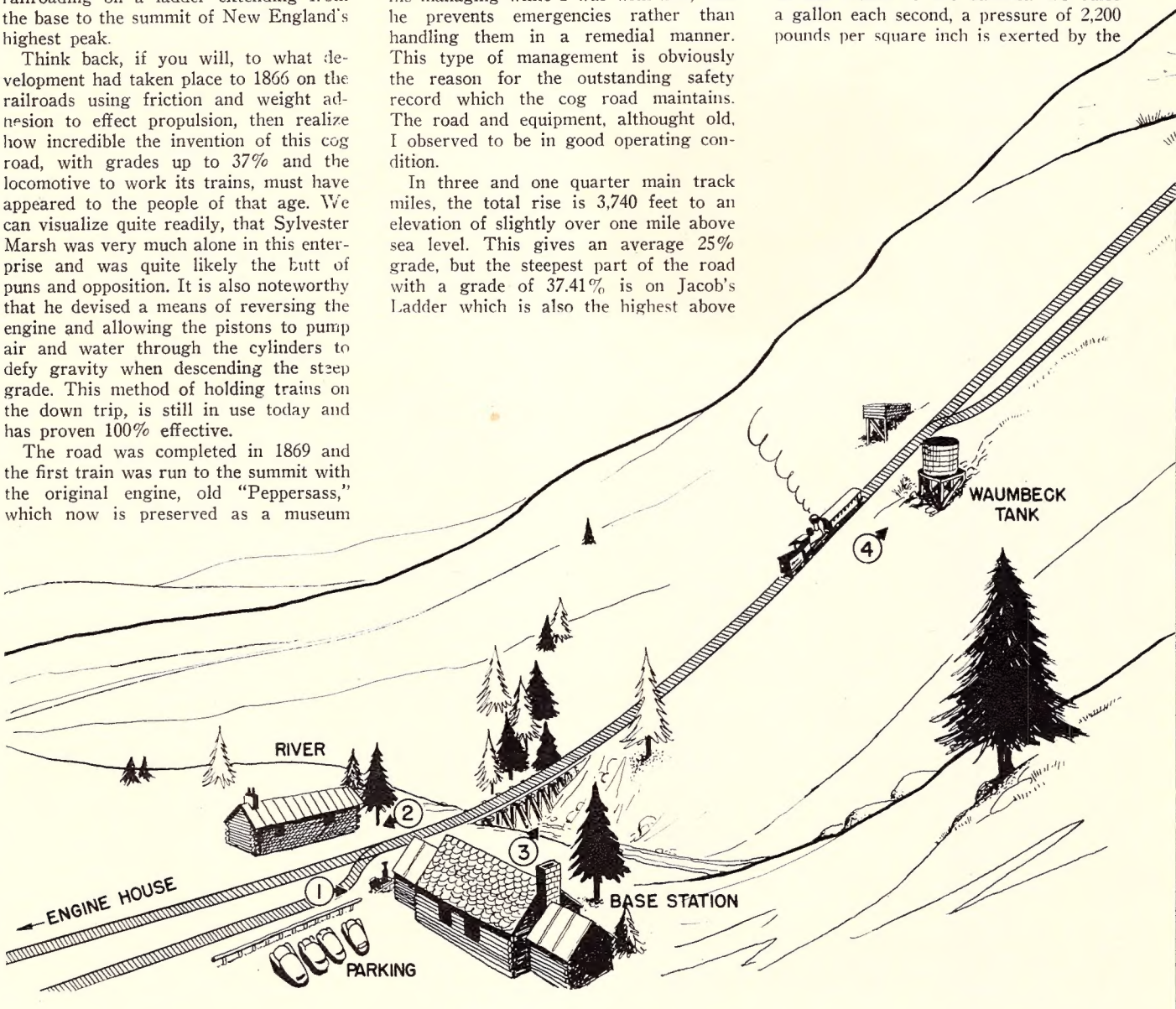
The present type of locomotive with a boiler that is horizontal when on the grade was devised in 1878. Seven of these engines built by Manchester and cars by Laconia are still in service.

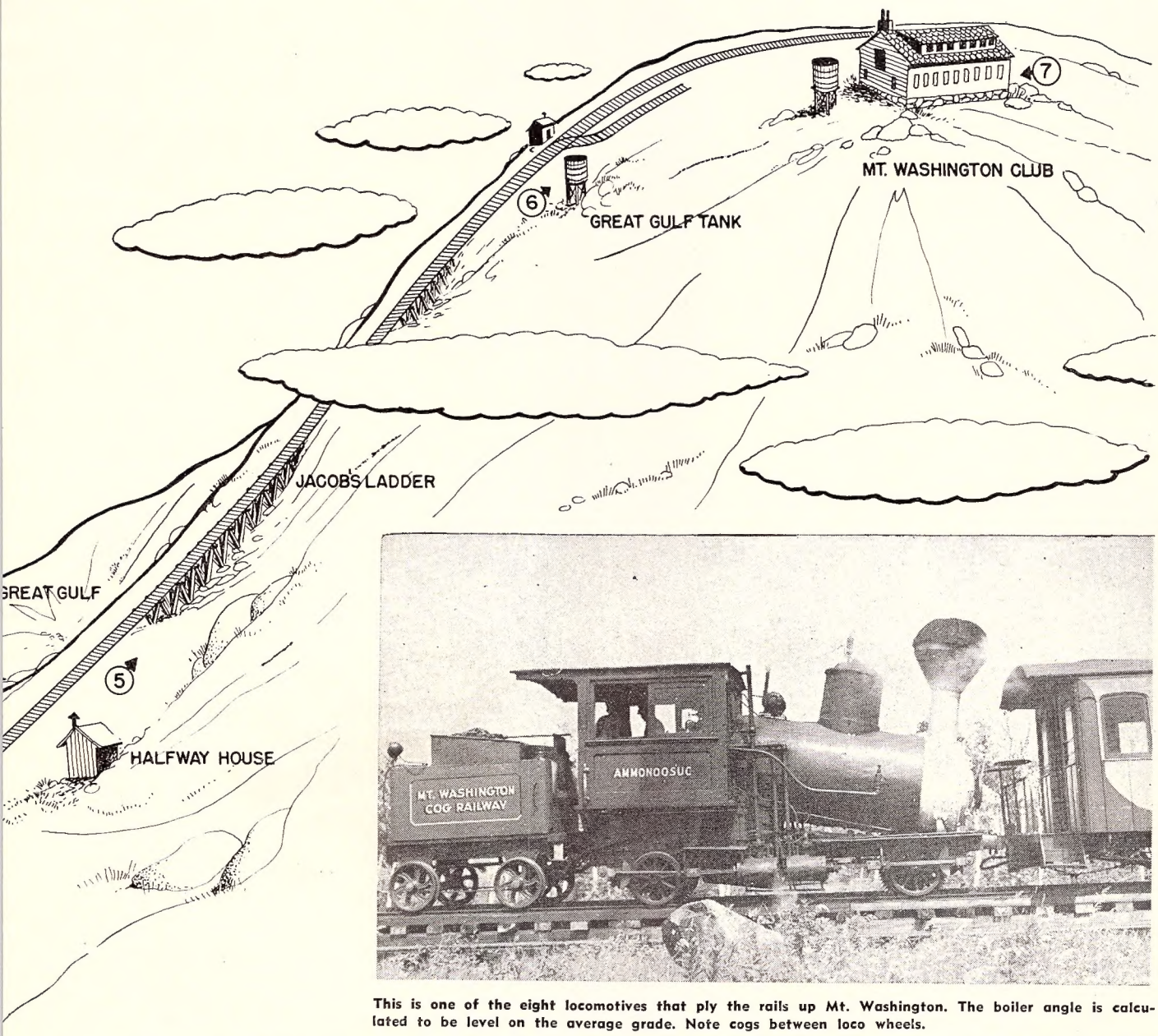
The Editor of RMC had arranged with Col. Arthur S. Teague, Vice-President of the cog road for me to inspect and photograph the facilities and equipment and otherwise gather material for this article. I found him a very accomodating and efficient operator. He works from any part of the property which may be the scene of his immediate attention. Being a railroader myself, I can appreciate, from his managing while I was with him, that he prevents emergencies rather than handling them in a remedial manner. This type of management is obviously the reason for the outstanding safety record which the cog road maintains. The road and equipment, althought old, I observed to be in good operating condition.

In three and one quarter main track miles, the total rise is 3,740 feet to an elevation of slightly over one mile above sea level. This gives an average 25% grade, but the steepest part of the road with a grade of 37.41% is on Jacob's Ladder which is also the highest above the supporting ground. In fact the entire road is built on a continuous wooden trestle which varies in height from two to over twenty feet. Due to the nature of the terrain, this type of construction was more feasible than earthwork.

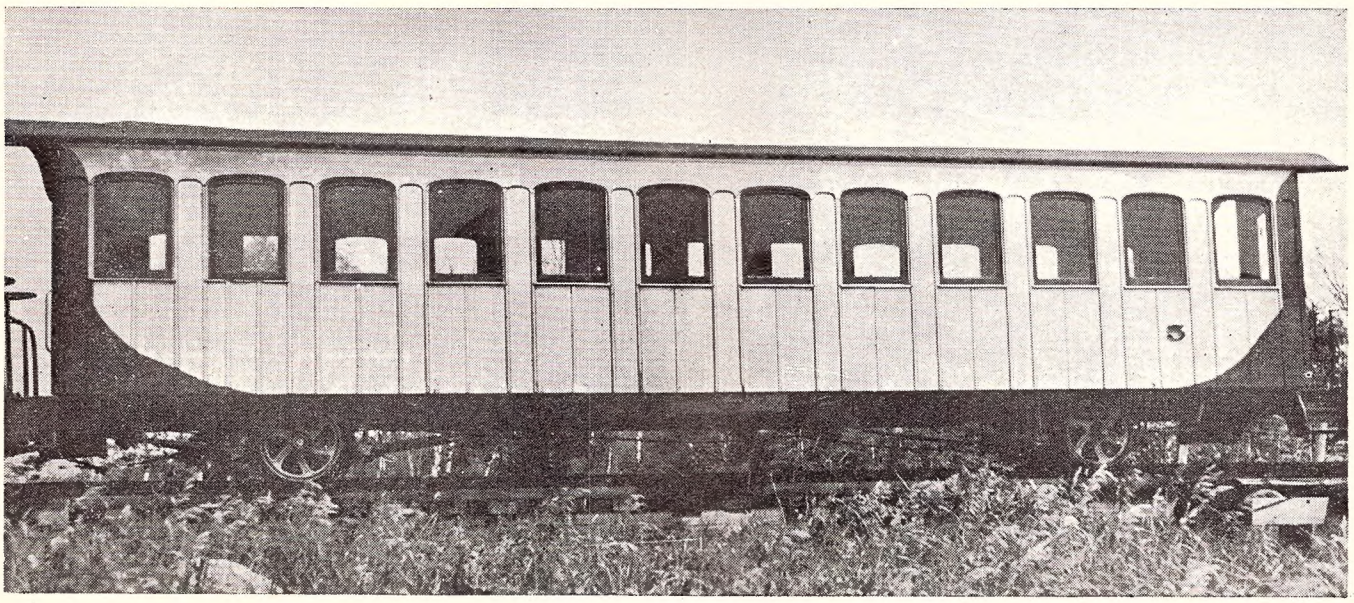
Timber line is crossed about half way up the mountain and the climate at the summit is similar to that of Labrador.

The Mt. Washington Club (Hotel) at the summit is operated by the Railway. There is also a Government weather observatory. These, in addition to locomotive service pose a water supply problem. This has been met with a pump at the base station and a pipe line carried on the trestle to the summit. To raise a gallon each second, a pressure of 2,200 pounds per square inch is exerted by the



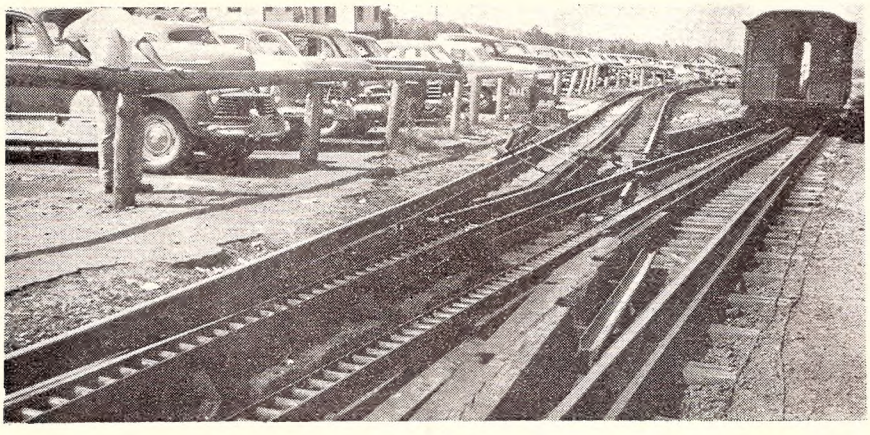


This is one of the eight locomotives that ply the rails up Mt. Washington. The boiler angle is calculated to be level on the average grade. Note cogs between loco wheels.

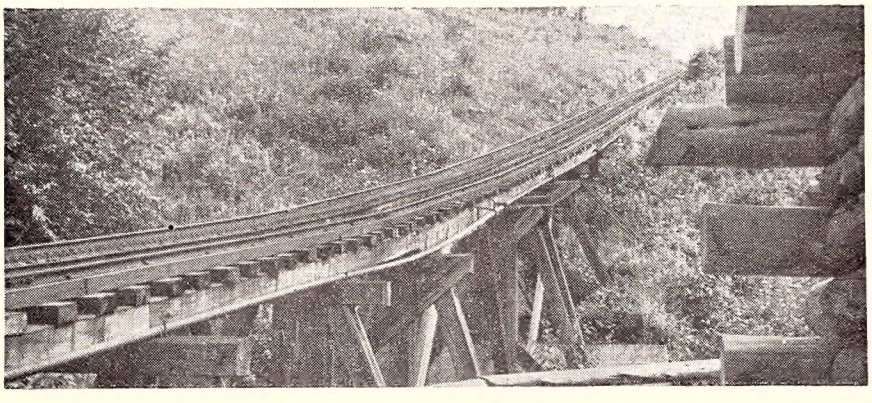


One of the ancient wooden coaches originally built by Laconia. Each coach is equipped with powerful drum brakes and are geared to the cog as well. Seats are at a slight angle. For safety, coaches are *pushed* up the mountain

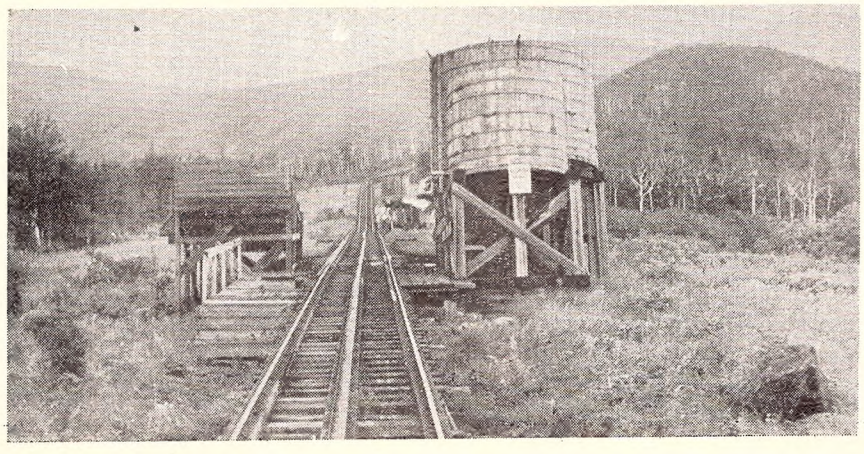
1. Old Peppersass, first Mt. Washington Loco, on exhibit at base station. Original Rail.



2. Shop track switch at base station. Note that both rail and cog must be removed.



3. Ammonoosic River Bridge, a wooden trestle throughout. Note grade even on bridge.



4. Waumbek Tank where tenders are filled before trip up mountain. Coaling station at left.

specially built steam driven pump. Obviously extra heavy pipe is used.

The center cog rail is built up of heavy angles bolted to the trestle with steel pins set into the angles and the ends riveted over. Engines have gears on each axle which mesh in the pins of the cog rail. Cars are also geared to the cog so that, with powerful hand operated drum brakes, independent on each axle, a car may be controlled, stopped or held at any point independently of the motive power. Actually cars are not coupled to the engines but a steel plate on the car end sill rests against a roller on the engine's breast beam. Operation is such that an engine pushes one car up or holds it while descending.

One of Col. Teague's safety rules is that in the rare cases of locomotive breakdown, no passengers may be handled by the disabled engine. With one cylinder out, one car (empty) may be handled to the base; with two cylinders out, engine may descend alone, all other failures to be held in descent by a completely operative engine. The wisdom of this rule is obviated by the severe grades which are present on the cog road.

The cog rail is continuous and this continuity is maintained even through the switches. This makes a turnout a rather complicated affair and bending the iron is composed of several distinct and individual operations. There are only three switches on the entire line. One is at the base station leading to a storage track. The others are at Waumbeck tank and Great Gulf Tank which are at the 1/3 and 2/3 points and are single end passing tracks. These are facing to up grade movements. Rather than attempting a word picture I say, "See the photos."

Probably the best way to illustrate is with an overall diagram, and photos of the more interesting details. Having been over the road previously I knew what to look for and what to photograph which permits a more comprehensive group of photos. Col. Teague also furnished a photo from off line of a train ascending Jacob's Ladder which I could not get during my tour.

The nearest rail point to the base station is Fabyan on the Maine Central which is six miles by highway. The trip up from Portland through Crawford Notch is in itself worthwhile. However unless driving your own car it would be well to make headquarters in Bethlehem, N. H. from where tour busses are operated to base station and to Franconia Notch on alternate days during the summer season. Bethlehem may be reached by M. C. to Whitfield or B & M to Littleton or B & M bus direct.

The Layout at Base Station includes cabins, repair and storage facilities for engines and cars, a parking space, souvenir shop and rest rooms in addition to the station itself.

It is not possible to ride the Diesel cab as we did on the High Bridge Branch nor is it desireable to ride the cab of the engine. It is possible, however, to ride the head end and to photograph

through the open front door of the coach as I did. However, consider those passengers who occupy aisle seats and do not impair their view through the door unnecessarily.

Immediately we start up grade over the Ammonoosic River and through a forest of green spruce which has been cleared for several yards back from the track. Quite likely this is to protect against forest fires being started by matches or sparks. We can feel the thrust of pistons and hear the sound of gears meshing in the cog rail as the little engine pushes up the steep grade.

Looking back as we stop at Waumbek Tank we can see the clearing through which we ascended, with the Base Station 1000 feet below and a mile distant. Beyond, the mountains are spread all over as far as you can see with lakes and valleys between. The tender tank is filled while our coach stands at a timber platform. Before the passing track was installed this was a change train point and the trains shuttled between stations. Today the down train is in the passing track above the station and when our tank has been filled we proceed and the other train comes out on the main for its descent to the Base Station.

We continue upward to stop at a small shelter known as the Half Way House. Continuing we climb Jacob's Ladder. Along this part of the road we are near the brink of Burt's Ravine which is a deep gash in the mountain to our left. Looking straight ahead over a curve and change in grade we see only clouds and just above the ladder at timber line is a preceeding train climbing toward the curve where it disappears. As we near the curve we note that the spruce trees have given way to Arctic shrubs and they in turn to small Arctic vegetation and rocks which were logically deposited in the glacial era.

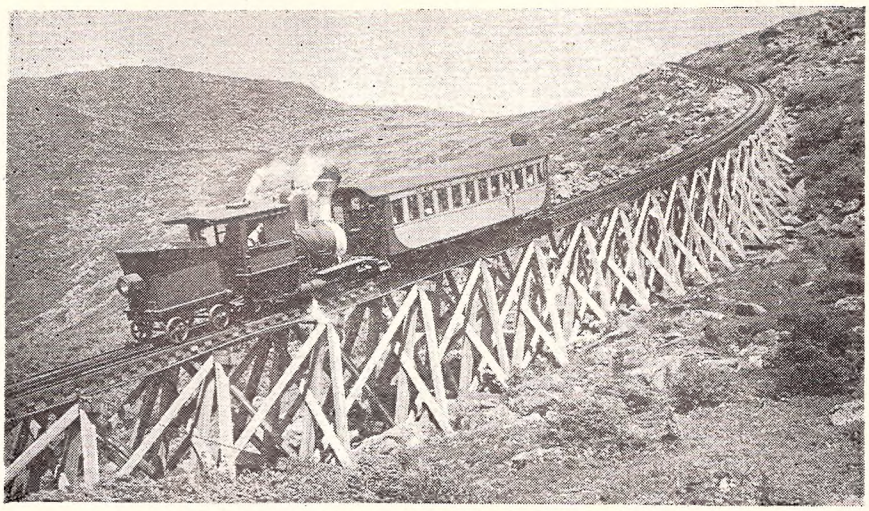
Our next stop it as Great Gulf Tank where we meet another downward train. It is no longer necessary for engines to take water here since they were recently provided with new and larger tenders. The view from here to our left reveals Spaulding Lake more than 2000 feet below in another gash in the mountain known as Great Gulf. Beyond are several other peaks of the Presidential Range namely, Clay, Jefferson, Adams and Monroe which approach the altitude of Mt. Washington.

Nearing the summit, the Mt. Washington Club is visible just over the peak's rim to our right and the automobile road may be seen to our left as it too nears the top. Our train stops before the club on level track of sufficient length to store several trains to await the descending tourists.

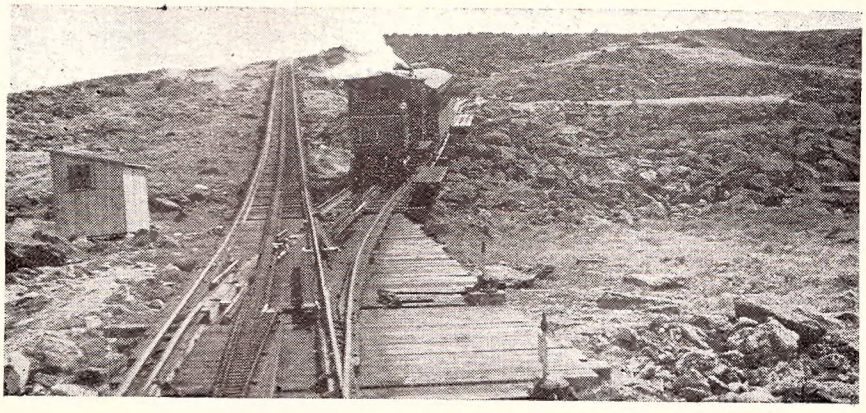
Meals are served, as you wish, ranging from a dog and coke to a full course dinner, and overnight accomodations are available. It is well to enjoy the views from all quarters while the sun shines and the clouds do not stop your view in spite of the autumn gale in August. We enjoy the view looking down on the world for only a few minutes when we can see our immediate surroundings. We are above the clouds and have the feeling of being on a large ship in mid-ocean when the gale blows in a full grown snow storm. This only lasts a few minutes and would have been a summer shower in some lowland had Mt. Washington not been in the way.

The snow has stopped but the clouds have only partly cleared. For the descent we take seats in the head end of the coach where we can look along the engine and see where we are going which is *down*. We are greatly surprised at the way things look from the opposite direction. The Gulf and Ravine and the surrounding mountains stand out in their own unequalled splendor as we drop from winter back into summer and our light summer clothing feels more adequate as we leave the train.

The writer acknowledges indebtedness to Rev. Guy Roberts for historical dates.



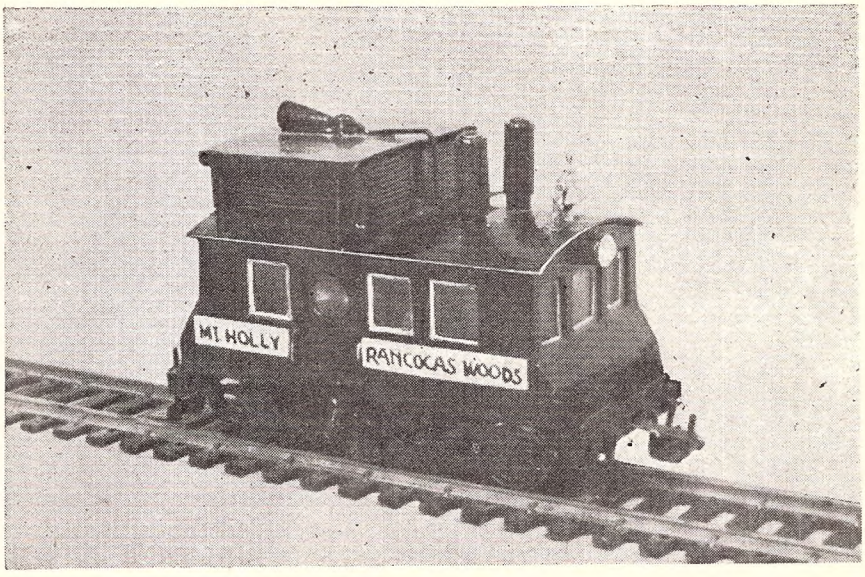
5. Jacob's Ladder, the steepest portion of entire climb, a 37% grade.



6. Great Gulf siding switch, a passing siding with hand operated cogway.

7. Mt. Washington House at summit. Several trains can be stored here on level track.

Here's an HO version of the 1915 jeep which was designed for switching service on the Motley County R.R.



The authors McKeen loco in HO gauge, double-ended for operation purposes.

"Gasolene" Switching Locomotive

by BILL SCHOPP

THE "Jeep" of the 1915 railroad world was the McKeen "gasolene" switching loco built for the Motley County RR between the county seat Matador, Texas and Roaring Springs Jct. on the Quanah, Acme and Pacific. Although the McKeen Motor Car Co. is better known for its distinctive *"sharp-prowed, round-sterned, depressed center doored, port-holed, all steel, direct drive"* gasolene motor cars for railroad passenger service, they also manufactured other vehicles featuring direct gasolene drive. Among these other vehicles were a round-windowed motor bus for Minneapolis, a railroad weed-burner, a concreting car for lining tunnels on the Clinchfield, a "mallet" motor car for passenger service on the Southern Utah, and the gasolene switching locomotive similar to the one shown here which I modeled in HO.

As with most models, construction of this McKeen locomotive began with the chassis or frame. This is based on a piece of standard ⅜ x ½ x 1/16" brass channel stock used widely for home-built HO gauge locomotive frames. The distances from the right-hand or front end, and from the top, are indicated for the various holes so the main difficulty is in getting them just where you want them. While a machinist's height gauge is a great help in laying out the frame, good results can also be obtained by careful measurement and checking, too. It is essential that the front end be cut off square, so be very careful of this.

You will note that the holes for the driving wheel axles are at a higher level than the trailing wheel axle. This is because of the difference in diameter of the wheels. The necessary 42" wheels are not available in HO gauge, so I have indicated dimensions for 43" wheels which are available. I drilled the driving axle holes 3/32" and the trailing wheel axle holes 1/16". In order to hold these holes to size in case my drill was not sharpened perfectly, I first drilled through with a drill little more than half the size of the desired hole, then ran in the correct drill. You may want to vary the sizes of these holes with the axles you have. The saw cuts and the notches in back of the frame are to enable you to bend the frame up or down slightly to take care of any unevenness in the wheels. I also squeezed the frame together at the rear to let my engine take sharp curves better.

Only two of the holes in the top are critical in their location and they have to clear the 3-48 mounting screws of the Pittman DC-60 motor. A 2-56 clearance hole is drilled somewhere between these two, while the front end of the frame is cut out as shown in the top view, leaving a flange at each side for stiffness. Two jackshift bearing plates must be drilled and cut out to that inverted T shape to fit up into the top of the frame. The hole in the front plate should be a running fit for the jackshaft, while the rear one should be a little smaller. Make these two pieces out of 1/16" channel or similar material.

The trailing wheels are from old freight cars mounted on an axle 1/16" in diameter. In conformance with NMRA standards, they should be replaced on the axle, after running it through the frame, 14.5 mm. back to back of flanges. If insulating bushing does not protrude at the back of wheel, you must make a thin fibre or cambric washer to slip between wheel and frame to prevent short circuits.

Lacking the required 42", 12 spoked drivers that McKeen always used, I tried using the 43", 8 spoked wheels imported by Red Ball. While these wheels are good for their original purpose, (locomotive trailing wheels and British goods wagon wheels) their lucite centers are not too good for drivers as I found out after a few sad experiences. However the tires were good, so new insides were all that was necessary. Lacking the patience to make spoked insides, I turned up solid ones, brass on one side of the engine, bakelite on the other. I forced these into the old tires and soon had new drivers. I turned the flanges off the center set of drivers to negotiate my sharp curves and on the insulated side also cut a groove in the trade for the spring pick-up wire to ride. 40" diam. diesel drivers may also be used and are already insulated.

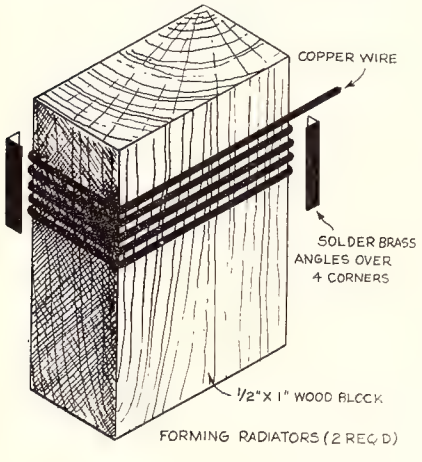
I had to make the driver axles specially since they are overly long to take care of the outside rods. I turned them up from 3/32" drill rod which was about the largest size that would go through my gears. The 14.5 mm. dimension on the large center section is to keep the wheels spaced to NMRA standards mentioned above. The diameter of the end parts may vary with the holes you drill in your drivers.

The gears are those used by Geo. D. Stock in his "garter drive" MU trucks. These are the smallest worm and gear sets to my knowledge. They reduce speed 10:1 and while I would rather have had 30:1 or so, it was essential to keep the height of this homemade motor unit down. I decided to drive both axles from a jackshaft with two sets of worms and gears, although the prototype drove only the front axle from the huge motor and relied on the side rods to take power back to the rear drivers.

So I drilled out the gears to a sliding fit on the driving axle, slid them on between the sides of the frame, then soldered them in place. A press fit would have been better, of course. Then I mounted the wheels, putting the insulated wheels on the "wrong" or right hand side for no particular reason.

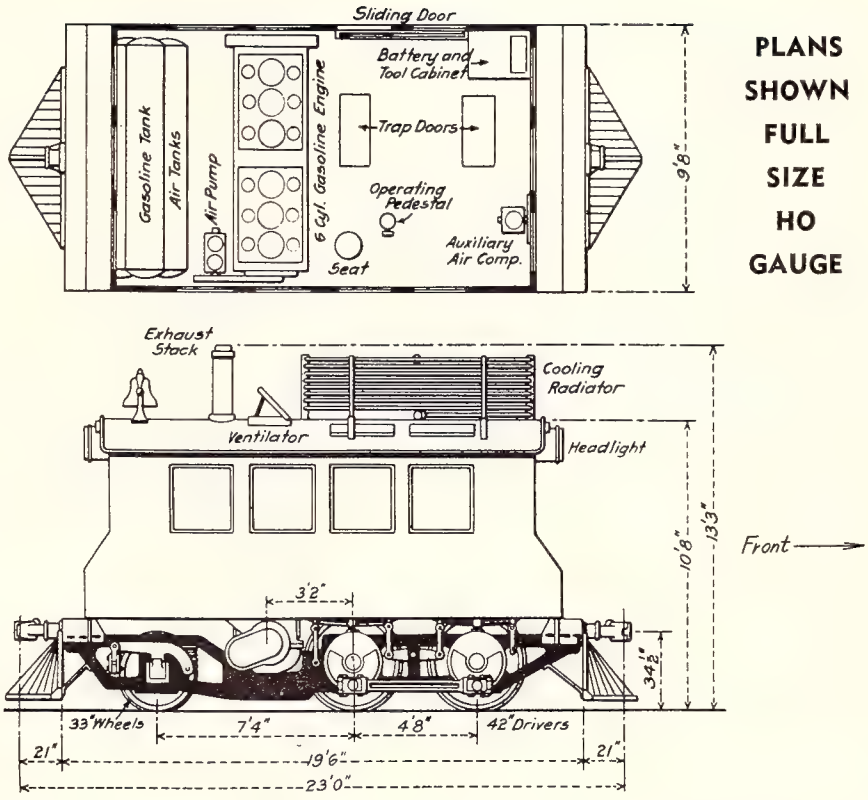
The jackshaft was also drill rod, turned down until the worms would slide on. I soldered the worms firmly in place. The back end of the jackshaft was turned down a little smaller so that the shoulder would prevent end-play in that direction. End-play in a forward direction was prevented by the front worm which was spaced away from the front jackshaft bearing plate only by a small washer formed by a circle of copper wire. I slid the back bearing plate up from the bottom, tack soldered it at one place only, inserted the jackshaft with the front plate in place, then tack soldered the front plate too. A little experimenting located the site where the jackshaft would turn the wheels easiest, whereupon I soldered the jackshaft bearing plates solidly in place. I turned a pulley from ½" brass rod and soldered in place, spaced out by a small washer only. Any motor truck pulley would do.

I cut two brackets ¼" wide and 1/16" narrower than the engine from 1/32" brass, drilled to clear 2-56 screws near the ends of each, and soldered them in place about as shown for eventual mounting of the superstructure or cab. To mount the pick-up wires which bear against the wheels I formed a piece of bakelite or fibre to the L shape shown. This is screwed to the frame by a 2-56 screw coming up from underneath and is further stabilized by the motor pressing in the crotch of the piece. A ½" by 2-56 screw runs up through the outboard end of this piece to which the various



pick-up wires are fastened with nuts. I made my pick-ups from spring brass wire bent to shape. The pick-up to the rear driver is under the bakelite piece, while those to the front driver and the trailing wheel are above. The lead wire to the motor is soldered to the top. I found that wires rubbing on *all three* insulated wheels were necessary.

The Pittman DC-60 motor must be spaced somewhat above the top of the



PLANS SHOWN FULL SIZE HO GAUGE

frame in order to clear the worms. I slipped short pieces of tubing over the motor mounting screws to accomplish this. The motor is mounted by putting a nut over the long rear screw after it comes through the frame, and putting a screw up through the frame into the center tapped hole. The motor specifications call for 3-48 threads in both these places. but I must confess I used 2-56 without difficulty except that the nut did seem rather hard to get on. A smaller pulley was slipped on the motor shaft, adjusted to come directly over the jackshaft pulley, then soldered in place. The excess shaft was then cut off. With a rubber band in place on the pulleys and the wire from the pick-up running to the insulated brush of the motor, I tested the unit out. I simulated the weight of the finished loco by a chunk of bar solder, which was mounted above the motor with wires at the four corners.

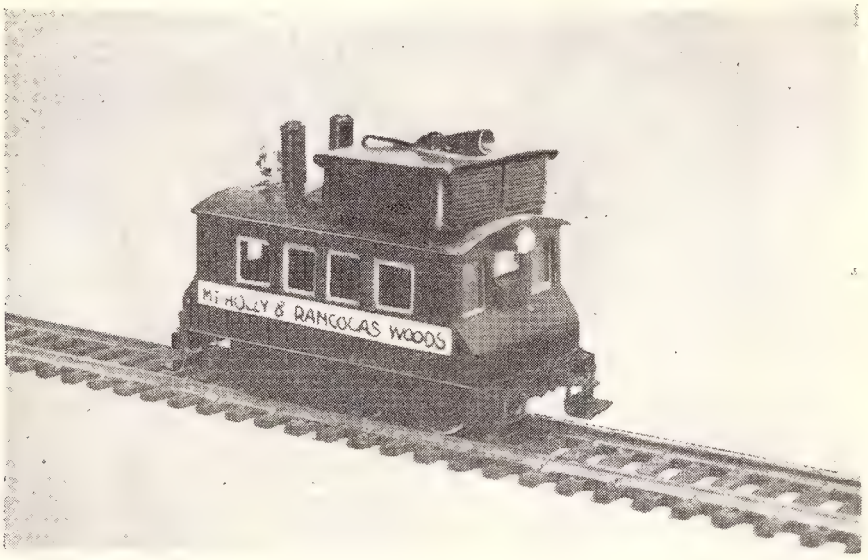
Of course no such truck frames were available so I had to make them up from 1/32" brass. 1/16" brass is recommended.

Here is my suggestion for laying out the truck frames. Get a bottle of machinist's purple layout dye and paint a section of your sheet brass with it. Then when it is dry, affix the sheet of brass to your drawing board with thumb-tacks bearing on the edges, and lay out the pieces with T-square, triangle, and so on, but using a scriber instead of a pencil. Holes for axles may be center punched while still on the drawing board. After the brass is removed from the drawing board, the frames may be cut out with a jewelers saw. I broke about a dozen blades in cutting mine out even though I drilled holes at the corners of each inside opening first. I suggest taking the dimensions from the drawing which are reproduced full size for HO gauge. If actual dimensions of this truck-frame are available anywhere, I would surely like to see them.

Although I drilled the truck frames for the driver axles, I did not for the trailing wheel axle, preferring to cut that off short outside the wheels. I might mention at this point that I don't have a large collection of drills, most of them being metric size drills I made several years ago in watchmaking school. However I drill a size somewhat under what I want, then ream the hole out with a mouse-tail file rotated *to the left,* or sometimes with a clock-makers broach. These clock-makers' broaches are very handy items to use in modeling for enlarging holes.

Equalizer bars were cut from 1/32" brass for the trailing truck and I soldered them as well as dummy journal boxes in place. 2-56 screws were slit in half for the springs. I fudged somewhat on the springs and hangers at the driving wheels, representing them only with square U's of wire soldered to the truck frame. The chain housing for the air-pump drive on the right side was soldered up out of two pieces of brass, then soldered to the truck frame. At a corresponding site on the left side should be a fly-wheel. I was content to make mine non-operating and so could make it from a DynaModel cart wheel. Truck frames were attached with short lengths of wire soldered up to the brackets meant for attaching the cab.

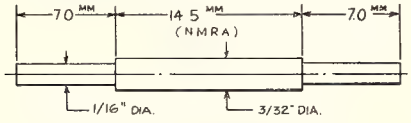
The cab was laid out on 1/32" sheet brass with layout dye and a drawing board as described for the truck frames. The floor plan gives the location of the door in the left side. This door has a *round* window, one of the few distin-



Prototype had a direct gasoline engine drive with clutch and several speeds. Best pulling power was exerted at 6 mph. The prototype was made in 1915.

guishing McKeen features apparent on the outside of the car. The ends, which were made in two pieces each, extend down below the cab sides to solder the bumpers to later, and also arch upward above the sides to fill in the curve of the roof.

Openings in the sides were cut out by first drilling small holes in the corners thereof, then placing the side in a vise with the line to be cut even with the jaws, and knocking the pieces out with a small chisel. I ground the end of a screw driver to a chisel shape and used



DRIVER AXLES (HO SCALE) NOT TO SCALE

it, with a few sharpenings, for all the windows. Little touching up with files was needed except in the corners. I cut the outlines with a jewelers saw, soldered the door inside, then assembled the four sides together with solder placed *inside* the corners as much as possible. The roof was formed from the same 1/32" brass and soldered in place. Pilot beams were ⅛" square brass soldered in place. I had to add a small box to the center front window to keep the top pulley from sticking outside the car.

Now there remained many holes to be drilled. The pilot beams had to be cut out though to receive the ends of the truck frames, which were also pruned somewhat to make a snug fit. Other holes in the pilot beams were for grabirons and coupler pockets. My model is presently equipped with my own perversion of the link and pin couplers, but will be converted to automatics at a later date. These will be easy to mount at the back, but the jackshaft pulley will cause some interference at the front. Since my taste in a switching engine runs to footboards rather than cowcatchers, I also drilled my pilot beams to receive the footboard brackets. (These brackets were later formed from brass wire squeezed in a vise, then annealed in an alchol lamp to prevent brittleness. I soldered them into the pilot beam and soldered the foot boards to the bent out bottom ends.

Two holes for grabirons were needed, at each side of the door. In the roof a mounting hole was drilled for a Lindsay bell, two mounting holes for the exhaust stacks, and openings for the two vents which were arranged to come directly over the motor brushes.

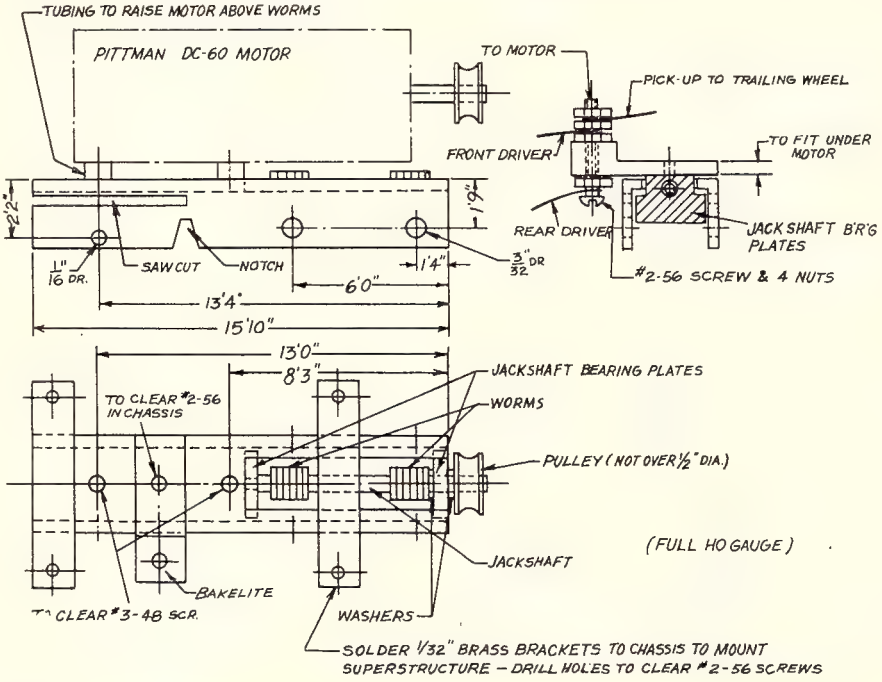
To add weight to the locomotive, pieces of ¼" thick brass were cut to fit under the windows on each side. These had to be recessed in various ways to clear filets of solder in the corners, the inset door, and the pick-up springs and mountings. These were soldered in place at the bottom edge, then I put the cab on the underbody and spotted, drilled and tapped 2-56 four holes for the mounting screws (only two mounting screws are actually needed).

For detail, besides the Lindsay bell, headlights were turned and cemented, with jewels, to each end. I also turned the exhaust stacks (2) and affixed them with a screw up through the roof.

This cooling tower presented somewhat of a problem since I didn't know just what it looked like from other than the side views. Finally it was decided to make it the easiest way, per the small drawing. Bare copper wire was tightly wound around a piece of ½ x 1" wood, then home-made angles of shim brass were soldered over the corners. Then I soldered the two coils needed to make up the width of the engine to a brass deck mounted on the roof. Over all a brass roof was mounted with bent down edges. Although I didn't do it, you might care to cut or cast additional weights to fit inside these two cooling towers. On top of the tower, although I can find no evidence the prototype had it, I mounted a typical McKeen airhorn made from the tapered tip of an automatic pencil. The door "step" was made from brass ladder.

There now remained only the outside connecting rods which served no useful purpose in my model and so were left till last. I cut 1/16" thick disks of brass from a 5/16" rod after drilling them in the center and marking them 1/16" in from the edge for the crankpins. I drilled for the crankpins and tapped the holes 0-80. The side rods were made up from brass, with the holes spaced 4'8" apart, the same as the drivers. I made the holes to fit the shoulder on the short Varney crank-pin screws (for the Dockside) I used for cranks. Discs were then soldered to the ends of the axles to rein force the tight fit. My counterweights are on the inside of the discs, believe it or not, so I don't have to show them.

After painting and a goodly drying period, I slipped pieces of filing folder cardboard back of the windows, marked the lines for the sash, then cut these out with a razor, added celluloi, and cemented the sash in place. Lettering was the final step.



An HO model built according to the methods described in this series.

Detailed Caboose ••• PART TWO

This elaborate HO model was built with a combination of commercial parts and fabricated pieces of wood and card stock. Building method is complete enough for the beginner yet detailed for the expert.

by IRA DEUTSCH

LAST month we described the construction procedure for the caboose underframe, sides and ends. Here we continue with the initial painting and exterior detail.

Now get out the old bottle of box car red paint (Floquil seems to have the best shade for this car) and spreads it all over the outisde of the end walls. White the brush is wet, the entire underframe, inside flooring, end platforms, etc. can also be covered with the same color. The inside of my car is painted two-tone green which is typical of many cabooses. (I have since discovered that the prototype interior uses brown and grey, the latter being on the upper half of walls, and although it is too late for me to correct my error, I haven't lost too much sleep over this shortcoming.) After you have decided on your color scheme, the inside of the end walls should be painted accordingly. Paint the inside door overlay (which I hope you haven't attached yet) the color of the upper half of the walls. After the paint has dried, cement little rectangles of celluloid behind the inside and outside end door windows, and then cement the inside door in place. This results in a double window which is practically unnoticeable. Had the door been made to scale thickness, the end wall would have been very weak.

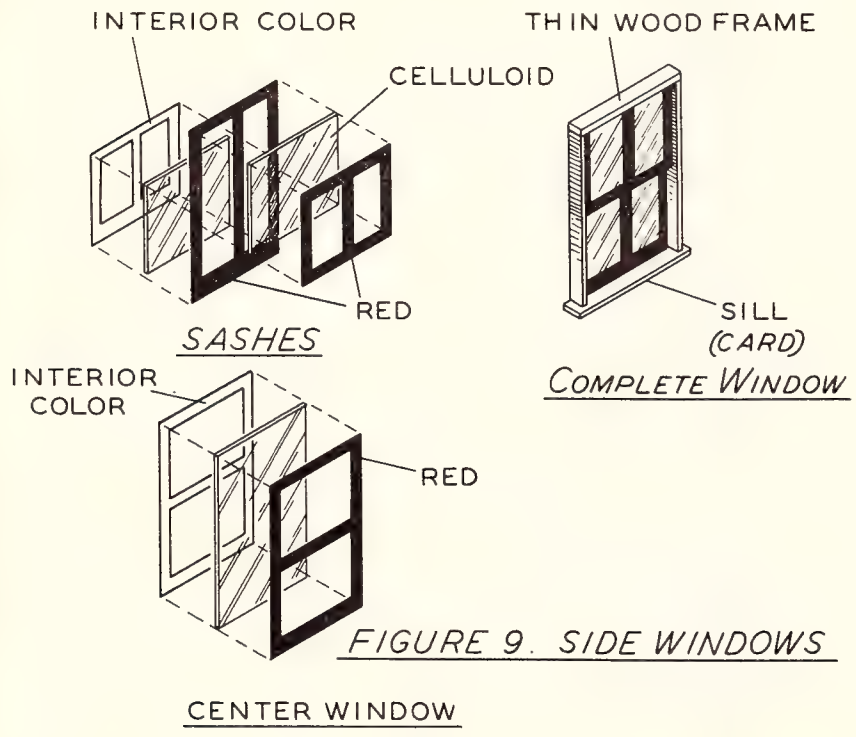


FIGURE 9. SIDE WINDOWS

Mount the end walls squarely with cement and small pins, and add filler blocks at the lower corners of each end.

Cover the bare corner filler blocks with shim brass poling sockets. These are L shaped and have the socket on one side and two rivets on the other. The sockets are made by pounding a depression, using a dull nail as a puncher.

The side walls are next on the agenda, but these are comparatively easy. It's the windows that are hard, but we'll get to that. I made the main body of the sides from heavy grey cardboard, about 1/16" thick. Bristol board or thin wood may have been better, but I have used ordinary cardboard many times before and have found that it makes an excellent structural material. Whatever you use, lay out the outline of the side and cut out windows now. Cement the inner and outer overlays to the card sides and set them aside to harden under a pile of heavy books.

Now for the windows. If you're in a hurry and don't mind sacrificing a little realism, you can use the die cast caboose windows available at any hobby shop. My method of making windows is to do it the hard way, namely, to build up the frames and sashes of separate pieces just like the real thing.

To do this, first cut out all the sashes from the unscribed part of the drawing paper. You will need a total of eight full length and eight half length sashes. In addition, the cupola window sashes should be cut out now. Check fig. (10). The mullions marked "X" on fig. (9) are best made as separate pieces. Paint the sashes (on one side only) the appropriate colors. After the paint has dried, carefully cement all the half sashes and two of the full sashes to a sheet of cellophane; for the cupola windows, cement the half sashes for the side windows and two of the four end window sashes to the sellophane also. When the cement has dried, cut out all the sashes with cellophane attached to them. Then assemble all the sashes in the proper order as shown in fig. (9) nad (10). Be careful not to get too much cement on the "glass"—this is a rather ticklish proposition. Fasten the card posts to the cupola end windows and set all the cupola windows aside for the time being.

To finish the side windows, cut thin strips of wood to make frames. The wood pieces should be wide enough so that they will protrude slightly when set into the car side.

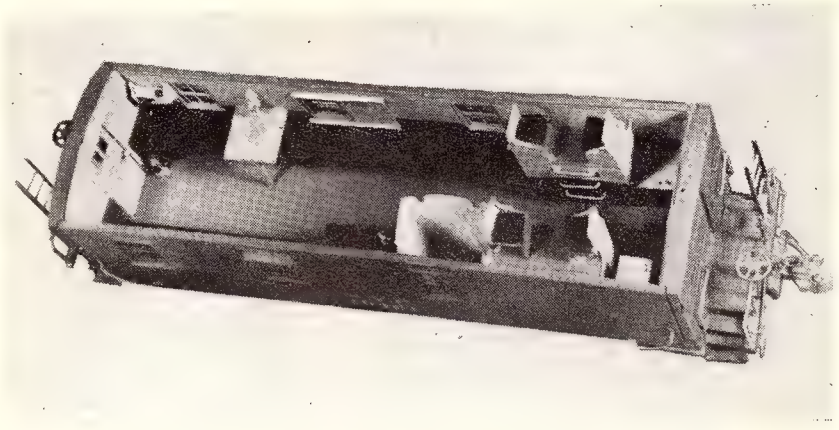
Now assign each window to a particular location on the sides, and, using a sharp razor blade, cut out each window opening to suit the individual window. the reason for doing this is that no mat-

ter how careful you are, there are likely to be slight discrepancies in the overall dimensions of the windows. Cement the windows into the openings carefully, making the frames flush with the inside of the walls and protruding slightly from the outside. Add the little card strips under each window sill and the shades over the center window (also of card).

The sides should now be painted and lettered as it is much easier to do so when the sides can be laid out flat. Leave an unpainted strip around the edge of the inside of the side where it will later be cemented to the floor and ends. Be careful not to smear the window "glass".

The lettering on my car is hand-inked, done with a fine tipped crow quill lettering pen and white ink. This is particularly easy to do on this car, since the lettering is so simple. If you are not adept at hand lettering (although it is a skill every model rail should acquire and can do so with a bit of patience and care) transfers can be used.

Fit the sides carefully to the car body, trimming the ends if necessary to produce a smooth fit against the ends of the car. Do not fasten the sides to the car



The authors model, with roof removed, showing detailed interior.

edge of the overlay, flush with the main part of the roof and the cupola opening. The cement between the layers of the "three decker sandwich" will keep the roof from unbending.

Make the cupola base of pieces of wood 1/16" x ⅛" as shown in fig. (11), and fit it into the cupola opening. Then cut a thin card overlay to fit over this base and extend slightly over its outer edges so

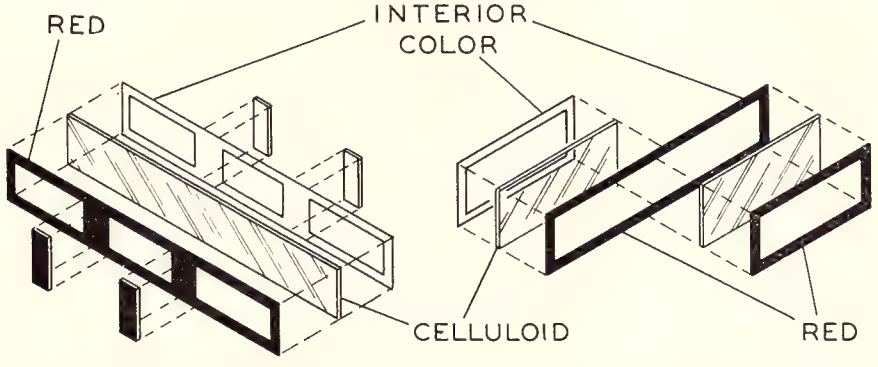


FIG. 10 CUPOLA WINDOWS

at this point, however, unless you intend to omit the interior detail.

The next major step is the construction of the roof. It is made of the same cardboard as that used for the sides. Since all cardboard has a "grain", a small sample should be tested to find the proper direction for rolling it sligthly without "cracking". Having done so, lay out the outline of the roof and the opening for the cupola frame (check fig. (11.))

Cut out the roof but not the cupola opening and proceed to bend the roof to the proper curvature. To do this, work the roof between thumb and forefingers until it has reached the proper shape. This may require a bit of patience. Cut another piece of thin card to dimensions sligthly less than the roof piece which has just been bent. This piece is to serve as the inner roof, and should be bent to the same shape as the main roof. Now cement the two together, carefully centering the thinner piece. Then cut out the cupola opening, using a sharp razor blade, and overlay the roof with covering of ordinary typewriter paper. Trim the as to form a trim, and cement to the base. Next, cut four 1/16" square corner pieces, each cut to the same height as the cupola windows which were made previously. Then, cement the corner posts and the windows to the top of the cupola frame, butting the posts against the window frames. From the same 1/16" x ⅛" strips, cut two crescent shape pieces to support the cupola roof, and cement these over the cupola end window frames and corner posts. Then cut two thin strips of wood 1/16" x 1/32" and long enough to fit over the side windows and reach from one crescent-shaped piece to the other. Make up a little cupola roof of the same material as that used for the main roof, except that no overlays are required, and cement it to the top of the cupola. Notice that it overhangs slightly.

The roof should now be fitted to the body of the car and the places where the end walls will support the roof marked. In the center of these locations, force a bank pin through the roof; this will serve to position the roof when it is put in place. Locate the exact points on the end walls where the pins will enter and then force a similar pin into the walls and remove it, forming a hole for the roof pins. These two pins will hold the removable roof in place quite well, provided they are not too loose in their holes. If such is the case, coat the pins with cement and allow it to harden before replacing the roof. All this is assuming, of course, that you wish to have a removable roof; if not, the roof may be cemented directly to the ends now.

You will note from the plan of the roof that this car has a great deal of catwalking. Most of it is modeled of scale 6" wide boards (strips of thin card) and supported by 1/32" square strips of wood. The two boards alongside the cupola are 9" wide and are 6" lower than the rest. Top off each of the small end platforms with a small grabiron. While making grabirons, add an L

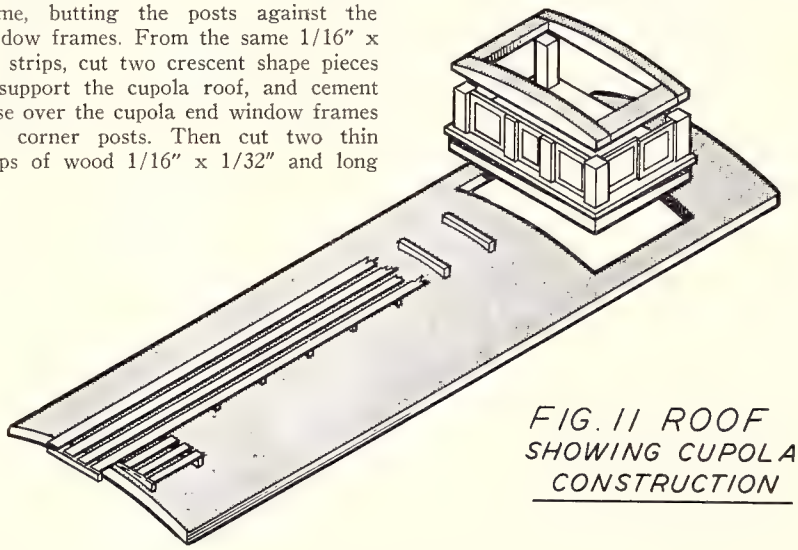


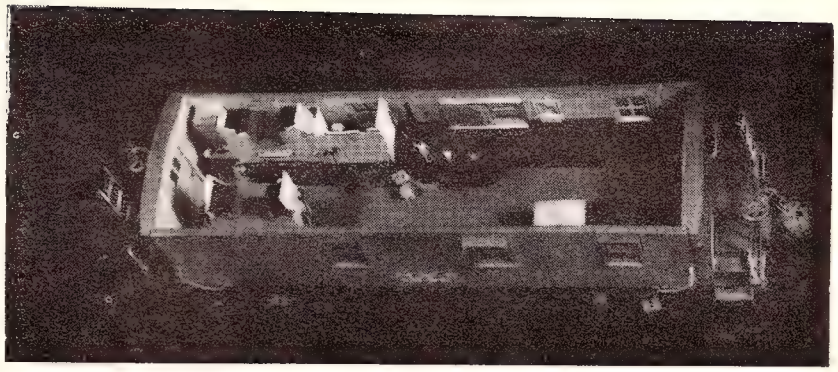
FIG. 11 ROOF SHOWING CUPOLA CONSTRUCTION

shaped one to each corner of the cupola roof as on the plan. These are made according to method shown in fig. (8).

Locate the hole for the smoke jack and drill it to accomodate the base of the pipe you will use. Although excellent ones are available at little cost, turning one's own smoke jack is a simple matter if the facilities are available; mine is turned from brass with a bit of shim stock wrapped half round and soldered to the top for a cap. After the pipe is cemented into the hole in the roof, add a wire brace to each side to keep the wind from blowing it away.

Other details which should be fastened to the roof are the diagonal braces under each overhanging end of the roof walk and the tiny wire loops which will hook over the top ends of the ladders. These are fashoned of shim brass and #30 wire respectively. Four little pieces of wood are cemented to the underside of the corners of the roof to form the extensions of the theoretical side framing; these are filed from 1/16" square wood. Sun shades of thin card are placed over the cupola windows.

The underside of the roof (the ceiling) is braced by 1/32" square wood framing as shown in fig. (12). The rafters are



Roof rafters fit snugly between sides and ends. Roof is held in place by two pins.

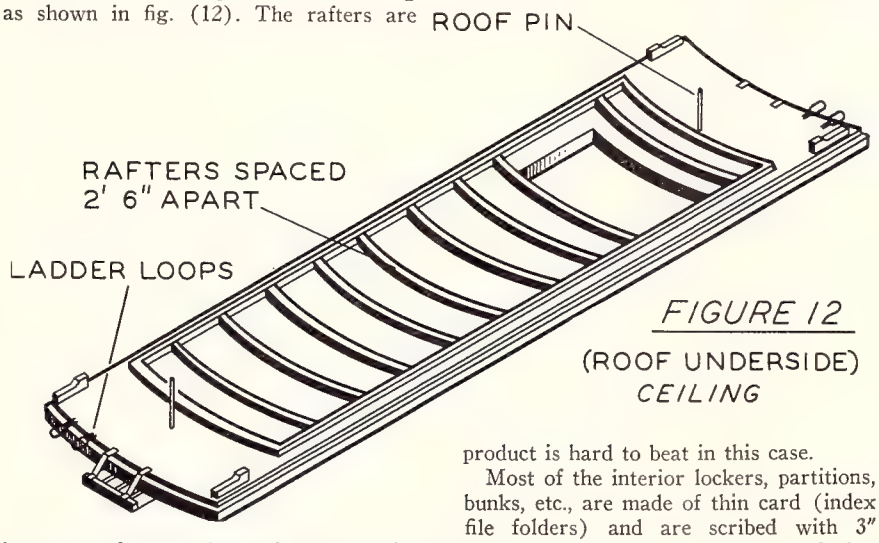


FIGURE 12
(ROOF UNDERSIDE)
CEILING

bent to conform to the roof curvature by moistening the sticks and carefully working them round. Be careful to see that the framing will not foul the sides.

The roof should now be temporarily placed on the ends so that the ladders can be fitted. These last can be made of standard ladder stock, but for realistic caboose ladders, it is best to build them up of strips of brass and #26 wire, as shown in fig. (13). Be careful when soldering the ladder to the top of the end railing in order not to melt the joints already made. Clip off the wire tops so that they extend through and just beyond the wire loops on the roof.

The roof should now be painted to match the rest of the car (ceiling should be painted the lighter interior color) and set aside to dry while we get on with the last major part of the work, namely, the interior. Those of you who are omitting this phase can add the curved side grabs, mount the trucks, and you're done.

Information for the interior detail on this car was obtained from a war time New York Central advertisement showing a cutaway view of the prototype. It was a fairly complete and accurate sketch, but left one corner of the car hidden. Therefore, it was necessary to use a bit of imagination to fill in here and there, but the general arrangement shown in fig. (14) is quite correct. Only one part need be purchased for the interior and that is the pot belly stove (an Ayres product). I have found it possible to turn fairly respectable stoves of brass on my small lathe, but the commercial product is hard to beat in this case.

Most of the interior lockers, partitions, bunks, etc., are made of thin card (index file folders) and are scribed with 3" boards,—so scribe a few square inches of card now.

On the scribed card, lay out the partition for the washroom, the sides and top of the lockers that support the cupola seats, the top and front of the tool box, the sides of the coal box, the supporting paneling for the bunks, and the two panels which are supposed to slide over the center windows. On the unscribed portion of the same cardboard, lay out the two fronts of the main lockers on which should be scribed three dummy doors. A door should also be scribed on the washroom partition. Now cut out these cardboard parts and assemble them by means of judicious use of tweezers and cement. After painting, put three grabirons on each locker so that the brakeman won't break his neck climbing into the cupola, and cement the lockers in place on the floor.

Now add the cupola seats which are also made of bits of card cemented together. Check to see that the seats will fit into the cupola as the one on this car is rather narrow. Next, make up the bunks by cutting the bunk supporting panels to the proper size and cementing these at a slight angle to thicker pieces of card which form the cushions. To represent shiny leather, paint the seats a glossy black. Set the bunks aside for the time being.

The "John" is next. Make the seat of a little block of wood with a hole of proper size drilled in it. A round bit of card cemented in a vertical position in back of the hole should be attached, and the assembly cemented in place. The toilet paper role is easily made from a bit of thin wire with a strip of tissue paper wrapped around it. Force the wire ends into the car side in the proper location, allowing the paper to dangle slightly. After painting the inside of the washroom partition white, cement it in place and add a pin head for a door knob. Check to see that none of this work will foul the roof rafters. If so, notch the offending piece with a razor.

The sink is made of a bit of shim brass banged in with in a very dull nail. This is cut out and cemented into a depression in a small block of wood which fits between the locker and the end wall. Above the sink, another block of wood is to be placed to represent the

(*Concluded on page* 50)

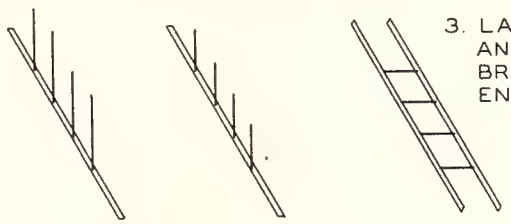

1. SOLDER LENGTHS OF WIRE TO BRASS STRIP
2. CLIP RINGS TO LENGTH
3. LAY ASSEMBLY FLAT AND SOLDER SECOND BRASS STRIP TO OTHER END OF RUNGS.

FIG. 13 MAKING LADDERS

THE ABBOTTSVILLE AND WESTERN

The Brass Hat at the controls of the Abbottsville & Western R. R.

An S gauge pike designed with an eye towards portability and interesting operation. Basically, the pike consists of two 4 x 8 tables in an "L" shape with all track on one level. The pike can be operated by one to four men.

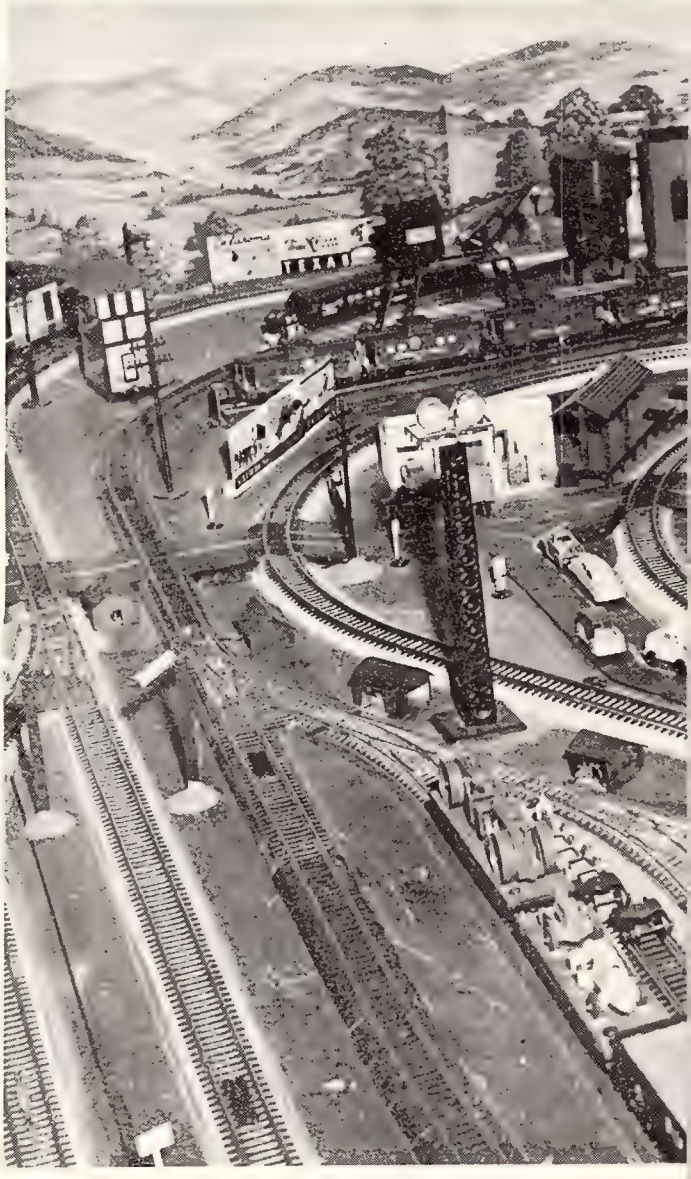
by DICK ABBOTT

THE Abbottsville & Western Railroad came into being in November 1949 after a visit to the exhibition of the Pacific Northwest Regional Convention of the NMRA held in Seattle. That visit crystalized a long-felt want and I decided to do something about it at long last.

There were several factors to consider. First, I am an Army Officer and as such can expect transfer orders to anywhere our troops serve. This factor determined that any pike I built would have to be so constructed that it could be dismantled and shipped with a minimum of time and damage. The second factor was the gauge. After looking at them all and, visualizing some of the quarters we have lived in, O gauge was definitely out. HO gauge intrigued me because of the comparatively large amount of trackage that could be laid but, in considering my lack of mechanical skill in building and assembling kits, that too was rejected. S gauge (3/16") seemed to fill the spot, so I bought a Super Scale Box Car Kit one Saturday afternoon and started. That was only the beginning. I never believed I could get so involved in anything.

I bought back numbers of the Railroad Model Craftsman and other books and magazines, poring over track plan after track plan. I wanted a lot of railroading, based on intricate switching moves in a limited space. My hobby shop dealer, Walt Sweeney, gave me hours of advice and assistance with the inevitable problems, despite the fact I was making myself a pest. The final decision was given to the plan shown. I decided that each place we had lived (except cramped quarters during war years) had at least one bedroom that could be used and that I could always have enough space to set up this track layout.

The L-shaped panel arrangement would give me about forty feet of main line and the center spaces would take care of the yards and round house, mak-



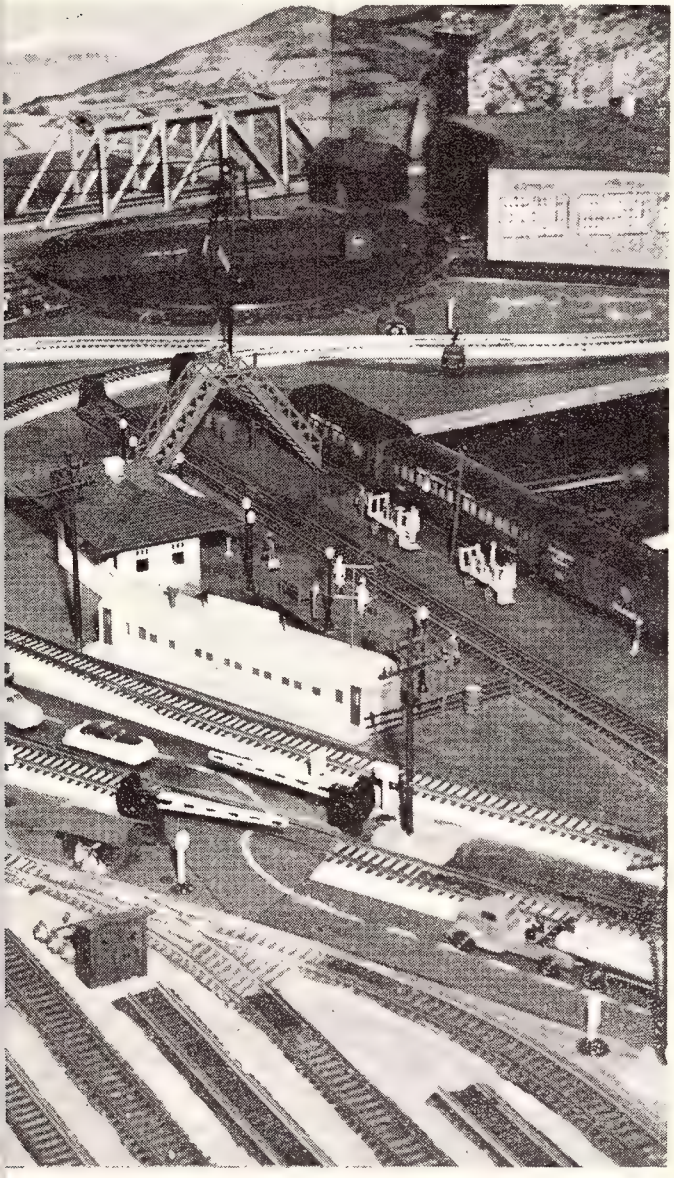
Roundhouse, turntable and other engine handling facilities in th

ing the most of my available area and having nearly every part readily accessable. None of this type benchwork would require permanent affixing to walls or floor.

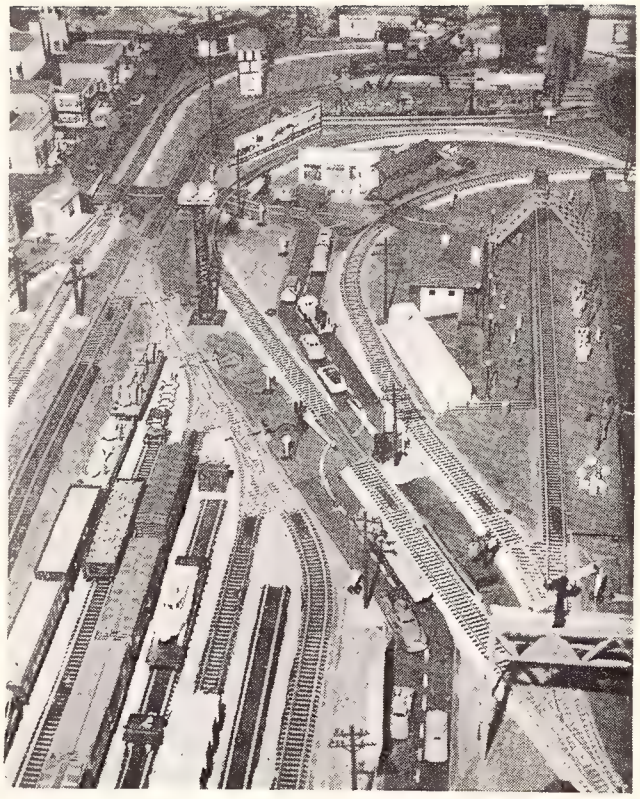
The two four by eight feet panels of five-eighth inch plywood were screwed to a two inch by three inch framework and twenty-four inch legs of 2" x 4" were bolted to them. Both frameworks were then bolted together in the "L" shape.

Experimentation was made with the several types of ready-laid track available but none proved completely satisfactory to me until I visited the Tru Scale factory of Augie Kniff at San Dimas, California. My curve radii were limited to twenty-one inches and his number 3 high-speed switch was my answer. The pike was finally laid with Tru Scale roadbed and switches, using 172 rail. This 172 rail is out of scale for S gauge but operation and switching moves being of paramount enjoyment, this type of trackage has proven almost foolproof.

Track bed was laid so that short sections may be removed where the two plywood panels join, in dismantling for shipment. My plans for dismantling are



rthwest section of layout. Abbottsville terminal is right center.



Looking west, over yards. Pix by E. F. Alexander & D. L. Heller.

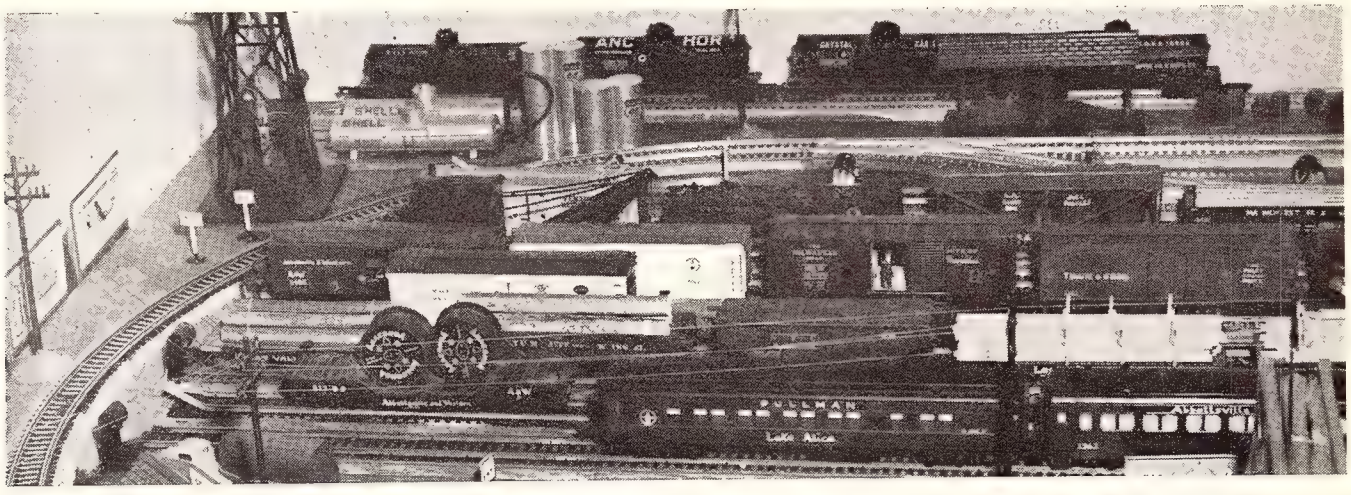
only theoretical and have not yet been put to the test but it is believed that when these track sections are removed and the panels unbolted, one panel will fit over the other, with separating blocks screwed in place, so the trackage, while facing inward, will not come in contact. Prior removal of the legs and control panel will permit easy crating of the layout for shipment.

When the pike is next assembled the leg length will be increased to thirty-six inches to allow more comfortable seating at the control panel. I now use a bench only one foot high and after several hours with legs stretched straight out, it gets a bit uncomfortable.

Mountain grades and overpasses are not practicable in my layout for two reasons. First, of course, is the shipping problem and any plaster construction would have to be broken up to move. Secondly, a five inch rise is necessary to have an overpass and that would require two hundred inches each way for a 2½% grade which I do not have. All accessories are removable for packing, one of which is a prefabricated corner tunnel. Lithographed backgrounds are fastened to one wall to provide the illusion of depth.

The control panel is so wired as to provide separate controls for the main line and the yards. Thirteen switches are incorporated in the layout, all activated by double solenoid switch machines and controlled by single pole double throw momentary toggle switches.

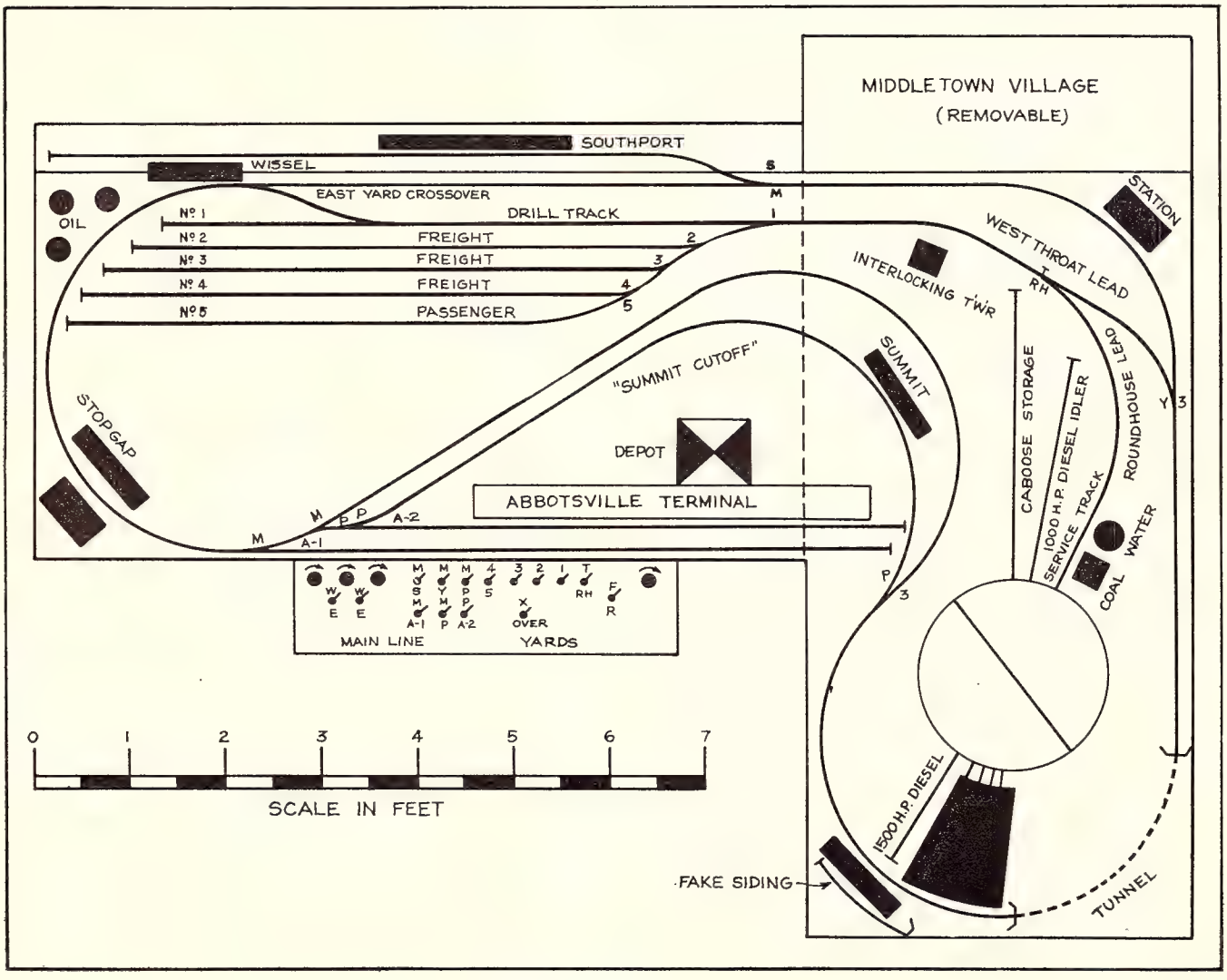
The main line has three blocks, each controlled by a separate rheostat and reversing switch, powered by a separate DC power pack. The yard has an individual control and power pack so that yard movements are independent of main line operation. An interlocking switch can cut out the yard control so that

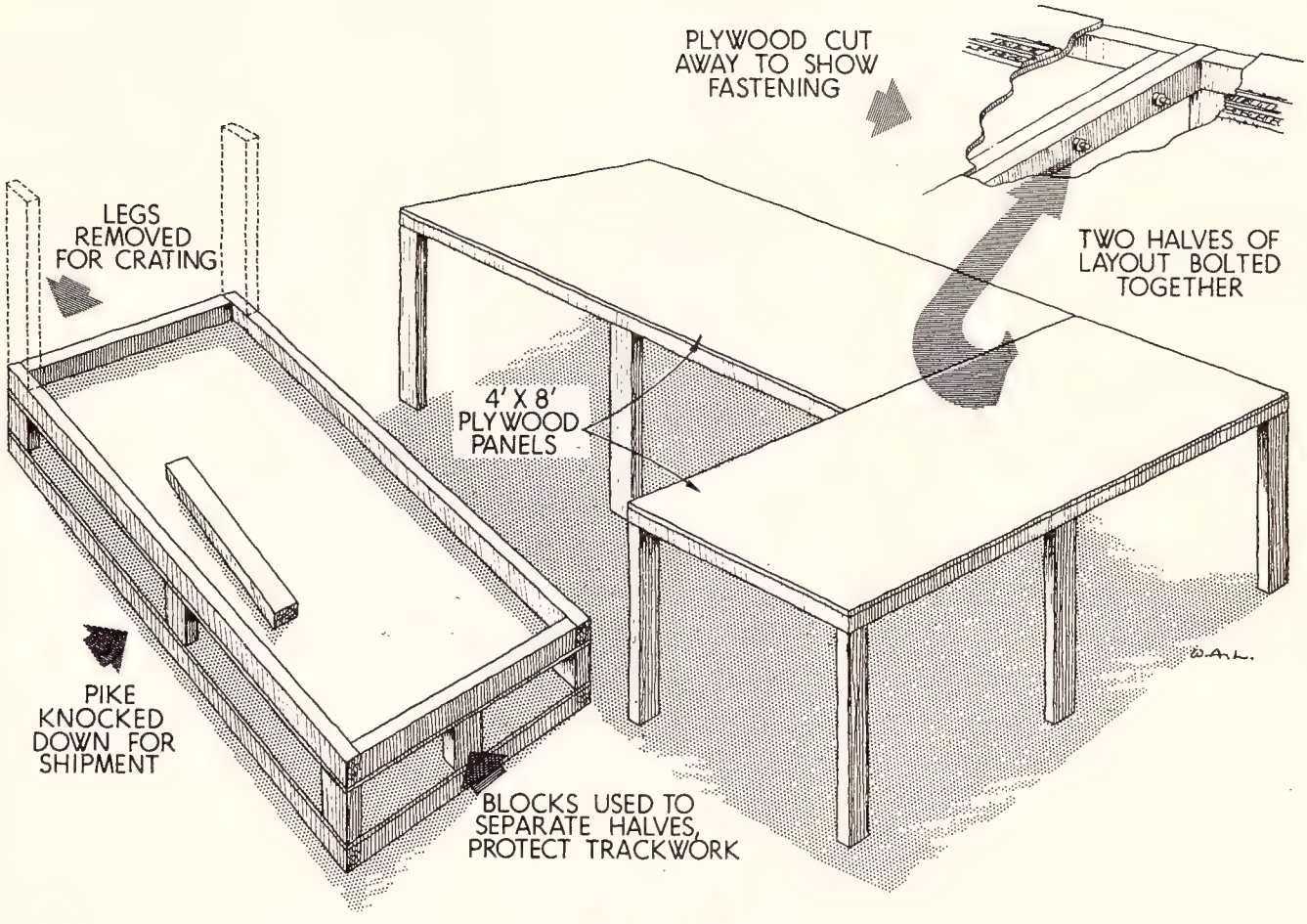


East end of yards with the oil depot at Wissel in background. About fifty percent of this equipment was built in the A & W Shops.

the yard can be worked from the main line block 3 when I am alone but operations night usually finds several of us moving a lot of freight. We call ourselves the Abbottsville & Western Operating Crew and consist usually of a Dispatcher, Engineer and Yardmaster. A fourth can fill in as switch towerman if present. There is a call board on the wall and we bid in for the various jobs so that we get a chance at each position.

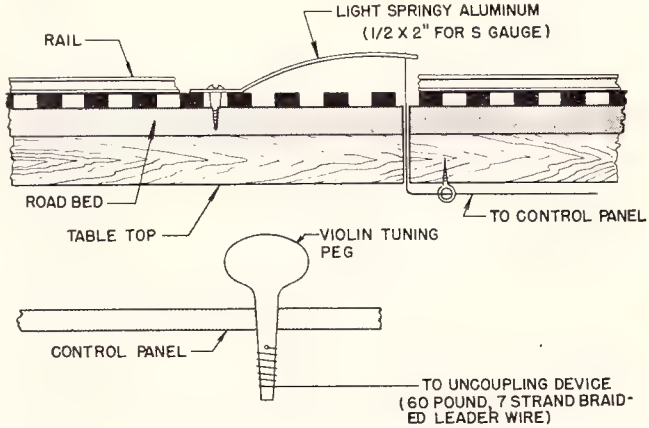
All operation is performed on written orders only. The Dispatcher gives the Yardmaster his train consist on Form N and the Engineer gets his orders on Form 19. All movements and make up must conform with these orders or the "Brownies" start rolling up. I have a long list of rules, violation of which win "Brownies" in varying numbers including Rule "G" which wins a 30 day suspension for violation. I have designed an uncoupling "gimmick" as per sketch and have seventeen of them located strategically throughout so cars can be uncoupled almost at will.




PLYWOOD CUT AWAY TO SHOW FASTENING
LEGS REMOVED FOR CRATING
TWO HALVES OF LAYOUT BOLTED TOGETHER
4' X 8' PLYWOOD PANELS
PIKE KNOCKED DOWN FOR SHIPMENT
BLOCKS USED TO SEPARATE HALVES, PROTECT TRACKWORK

The A & W now boasts of six locomotives; four steam types and two diesels (a sop to modernity but steam is first love). There is a Hudson 4-6-4, a Pacific 4-6-2, an Atlantic 4-4-2 and an 0-8-0 switcher. The yard diesel switcher is a 1000 hp Alco and the road diesel switcher is a 1500 hp GM "Camelback". Thirty-seven cars, both passenger, freight, and "crummies" comprise the rolling stock (Cabooses sounds so awkward). About fifty percent of my cars are made from scratch, the balance, kit assemblies, plus some "tinplate" cars revamped with added detail. Tinplate trucks and couplers are used throughout. One of my prize cars is a Venango Northern gondola with a load of "gen-u-wine" slag from the Shawmut Mines built from scratch by Bill Livingston of Endicott, N. Y. Most freight cars bear the road names of model pikes and others will be so named as I contact other model rails. I am collecting passes to model roads and when a swap is consumated, a car is usually labeled for that pike. Bob Bast really threw me, though, with his Drag Bottom and Tea Kettle Gulch Street Railway and Brewing Company —WOW!!! (I named a power house for his Drag Bottom Power and Light Company.) Bill Livingston of the Venango Northern (October issue of RMC) and I are working on a transcontinental model railroad network and we have six lines already tied in. I get almost as big a kick, corresponding with other Brass Hats, as I do in operating my layout.

My pike is unintentionally modeled after the Esquimalt and Nanaimo Division of the Canadian Pacific Railroad. I did not know of the existence of this Division until I attended the Convention of the Pacific Northwest Region of the NMRA at Victoria, B. C., this past October. The fan trip over this railroad gave me many a chuckle. The round house had four stalls, the turntable had girder sides like mine, the curves were sharp and the shortest tunnel on the CPR was on a curve as is mine. If I had not already registered my pike name I would have named it the "Eskimo and Nonaim" for sure.


LIGHT SPRINGY ALUMINUM (1/2 X 2" FOR S GAUGE)
RAIL
ROAD BED
TABLE TOP
TO CONTROL PANEL
VIOLIN TUNING PEG
CONTROL PANEL
TO UNCOUPLING DEVICE (60 POUND, 7 STRAND BRAIDED LEADER WIRE)

CLOCKWISE TENSION EXERTED BY TURNING VIOLIN PEG, PULLS STRIP FLAT COUNTER CLOCKWISE RELEASE OF TENSION ALLOWS RISE OF STRIP TO RAISE COUPLERS

That bright sunny day when I retire, will see oodles of space for intricate trackage and such space will be a primary requisite in buying a home to spend my declining years. Oh, well, a fellow can dream, can't he?

GAY NINETIES STATIONS

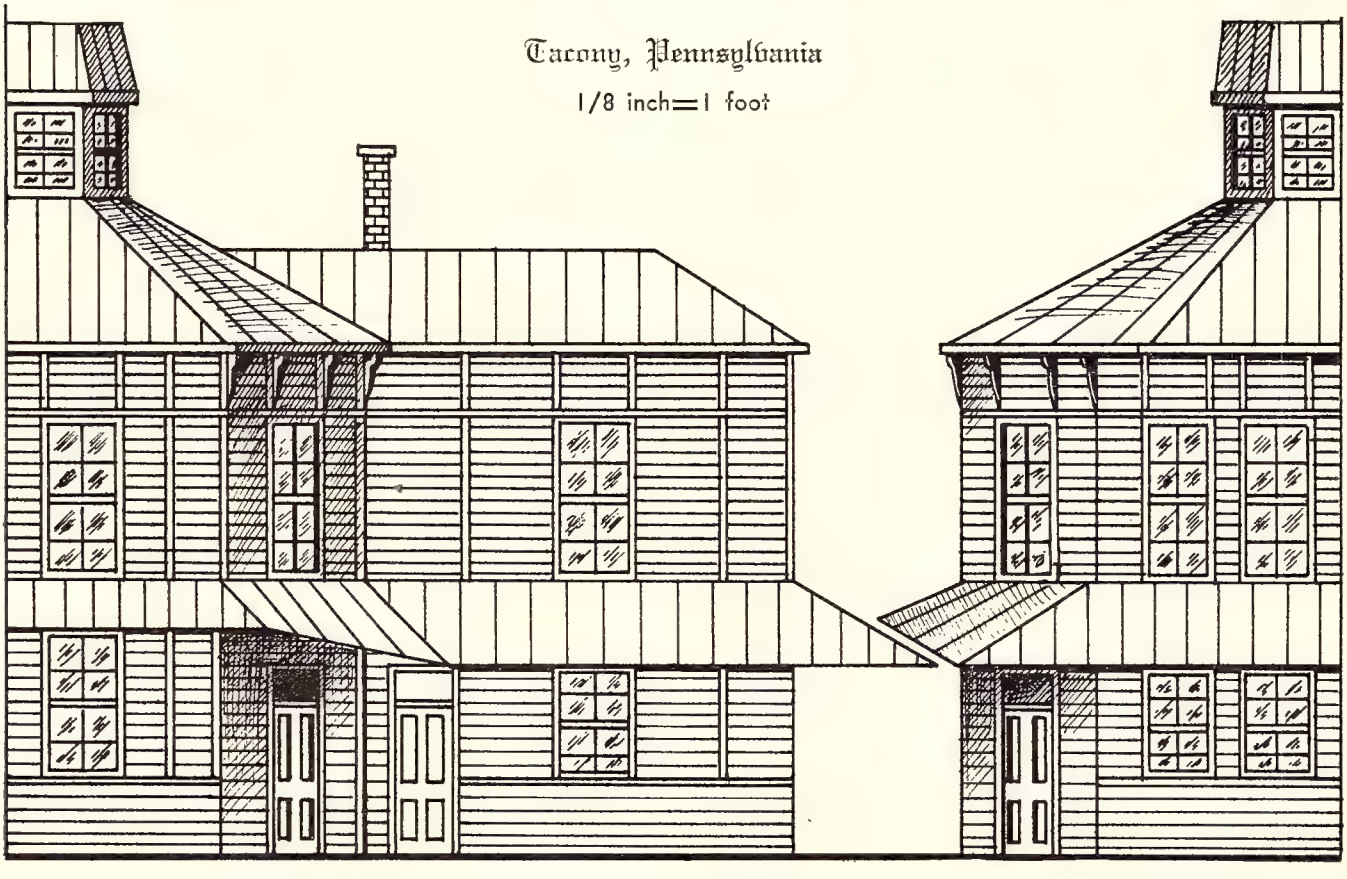
by Thomas T. Leaming

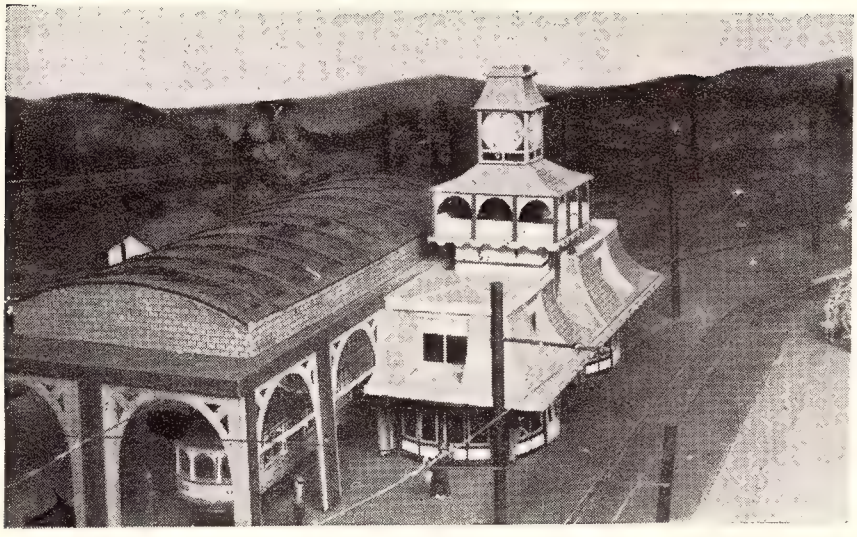
This type of station (CNJ, Plainfield NJ) can be effectively adapted to most layouts.

THE design of most station kits is the same regardless of gauge. They usually have a certain sameness that makes them fit into any railroad scene well, which, from a commercial standpoint, is the right thing. But many railroad modelers hanker after a station that is different, who like the type of architecture redolent of the Gay' Ninties and the Naughty 'Aughts.

A number of years ago I had access to a collection of station photos and from them sketched plans of two different depots, that of the CNJ at Bethlehem, Pa. and the Pennsy at Tacony, Pa.

Neither of these stations quite filled the bill for a particular site on my railroad. A double tracked main line and a single track branch line (actually the same line but my *pretender's* license is paid up and always has been) crossed at right angles there, so a tower to control the crossing was desirable in addition to the depot for passengers changing trains. Since there was no town site of any account nearby, it would be best for the agent to live over the station. To fill this bill, the station shown in photos was dreamed up, following the same school of architecture as the other two





This station, adjoining a car barn (HO) serves both an interurban and steam road. The first and second stories, as well as the tower, were made as individual units. Basic material for the entire structure was card stock covered with building papers.

depots, but simplifying it just a little in the interests of easier modeling.

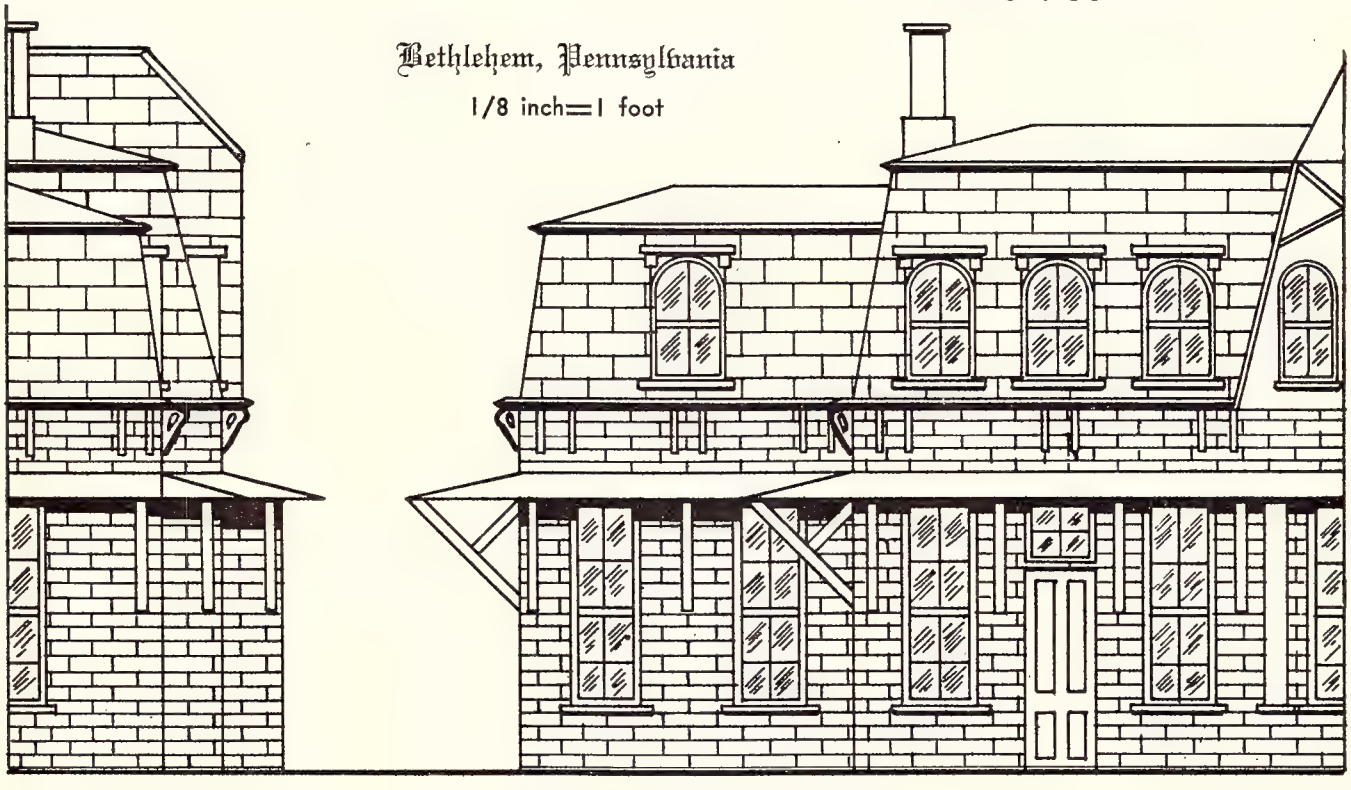
If you want to make any of these stations, particularly the Tacony one, here is the general procedure. First decide in the arrangement of sides. The Tacony station would just have four walls, with the octagonal tower a separate unit cemented into the center. Interior partitions could be added for strength if needed. The CRRNJ station would have four walls for the center part with three (or four) walled annexes at each end. The PRR station would consist of a big central octagon with three or four walled wings.

In a station of several stories with overhanging roof, I prefer to cut off the sides at the first story, put on a flat "ceiling" to the first floor extending out with the roof overhanging which will provide a good supporting foundation. The sides, of course, must be cemented to a floor first. Leave holes in the floor if you intend to install lights. I would cut out such a ceiling however to let the unique shape of the tower be continuous through all stories. This cut-out would also help keep the shape of tower.

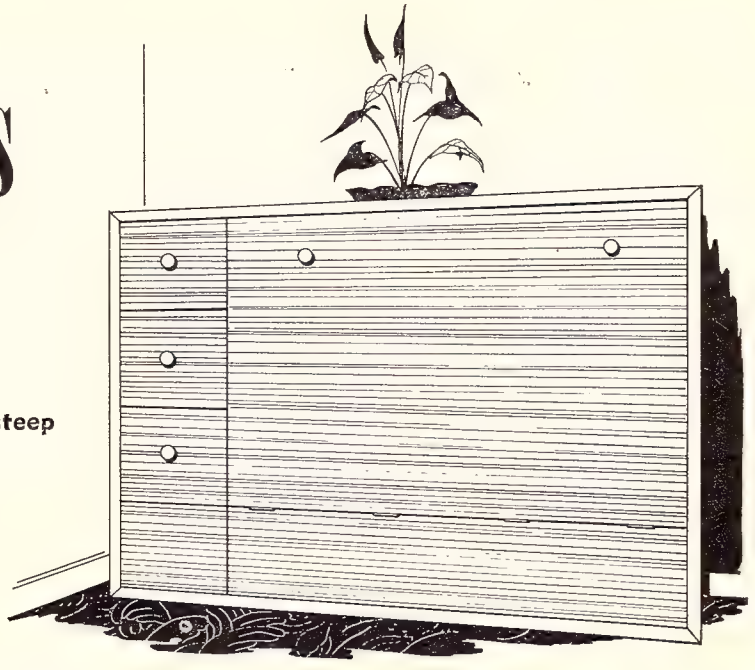
Next the upper stories would be added with their roofs. The exact design of roofs in all these stations should be figured out in advance with the help of a little geometry, drafting and common sense.

When using building paper, put it on before assembly. Now add trim such as chimneys, doorknobs, brackets, benches, baggage trucks and other typical items found around railroad stations.

When you finally put your station in place, take care that it does not give the appearance of just sitting on the ground. All too often a slightly uneven floor or baseboard or a bit of dirt will result in an unsightly gap.



Cliff Dwellers Pike

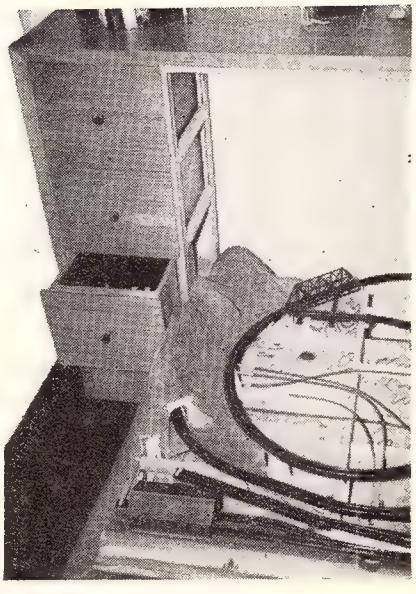


A TT layout built in several levels with steep grades, mountain areas, engine facilities and yards—but still only requiring an area 68″ long by 16″ deep.

by C. G. FADER

MODEL Railroads have been built in all shapes and sizes; in cellars, attics and spare rooms, but the apartment dweller faces a tremendous problem. Space is at a premium; the only locations for a layout available to him are under a double bed, hanging from the ceiling or a folding pike. For my apartment railroad, I chose a Hide-A-Way cabinet that could be folded up when not in use. Power tools were used in the construction of this project however common hand tools should suffice.

The pike occupies an area 38¾ x 51½″—that's a lot of space for a TT layout (many fellows with *less* space operate successful model railroads in *larger* gauges). The entire cabinet is 68½″ long, 44¼″ high and 15¾″ deep. Subtracting about four inches for the "Weldtex" front, bracing and open frame work leaves about eleven inches of depth for scenery. The highest mountain on the pike is 9½″ high or a scale 95 feet!



Open drawer of cabinet houses all controls.

Overall shot of cabinet with pike open. Legs are stored in center drawer of cabinet.

All track work is mounted on pine blocks 3″ high; some of them are glued down (poor but strong) and others are screwed in position. All road bed is Starline which proves very satisfactory; rail is of course H.P.; and no ballast is used. HO Gravel and corn meal were tried as a ballast without success. The road bed and track were painted with "black board" paint, a *fast* drying, flat black color; when dry the track tops were sanded. This produced a very realistic appearance. The *maximum* radius of the pike is 12″; switches are HP #7's and Train Terminal #3's. Switch machines were at first installed however they were abandoned in preference to the positive choke rod control.

The open, flat areas of the pike are covered with #2-0 sandpaper, painted with brown poster paint. Before the

paint dries, powdered poster paint (black) is sprinkled over it using a salt shaker. This produces a good effect.

The buildings are made from card stock of about post-card thickness. The engine house, station and water tank are RMC plans, the coal station and pump house are free lance.

For the mountain area of this folding railroad, I needed something light in weight yet crack proof. . .also inexpensive. After experimentation I settled on newspaper and flour paste. The rough outline of the hill or mountain was first formed by tacking narrow strips of card board (old Christmas boxes) to the pike frame. Next I covered this with narrow strips of newspaper soaked with paste. This was continued until a solid mass was produced. After drying (over night) it was painted with poster paints; four colors were used, black, brown, green and yellow. They were "just mixed" and daubed on with a sponge, later some spots were painted on with a brush.

Layout Controls

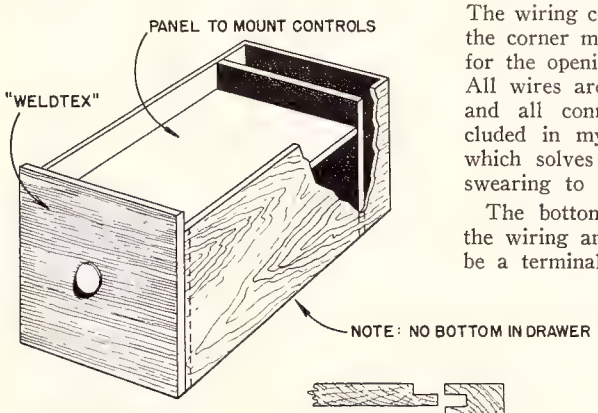
The cabinet drawer that contains the controls has no bottom, instead it has a *top*. The power supply is fastened to one side of the drawer and the controls, such as the DPDT center-off and the rheostat, are fastened to the drawer top (the top is made of masonite, painted with black wrinkle enamel).

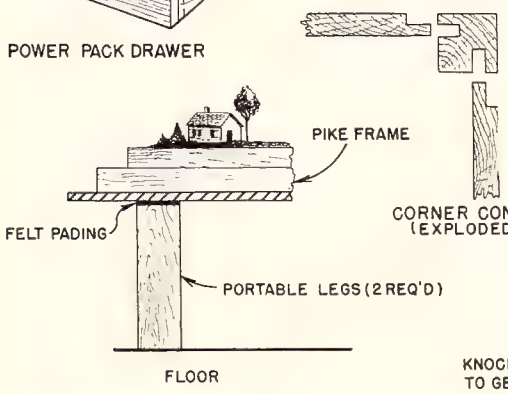
The wiring goes out the bottom of this drawer and is long enough to permit the drawer to be pulled out quite a distance. The wiring comes up to the pike beneath the corner mountain and is long enough for the opening and closing of the pike. All wires are coded for tracing trouble and all connections are soldered. Included in my tools is an Ohm Meter which solves many problems and keeps swearing to a minimum.

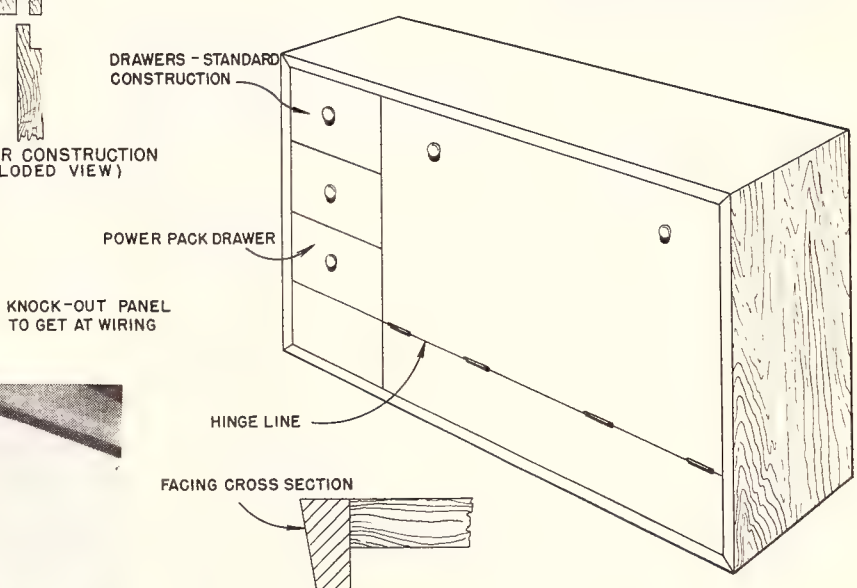
The bottom knock out panel aids in the wiring and eventually behind it will be a terminal panel as a junction point for all wires. A transformer (A.C.) was made that will eventually form part of my central supply; it has terminal posts of 5 to 30 volts. This device was made with four pieces of strap iron and a few spools of wire for the primary and secondary windings. For the core, I got a couple of stove pipes, block iron, for about $1.00 and interlaced them to build up the field. The wire for the primary was #26, enough for 880 turns. For the secondary, #20 was used, for 240 turns. Fish paper was used as insulation.

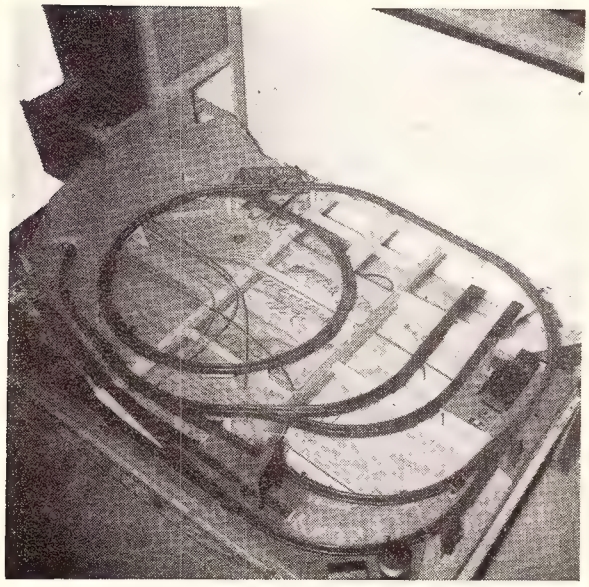
The rolling stock consists of kits and "scratch built" cars. HP automatic couplers have been installed on all equipment and add a great deal of interest to operation.

The top and sides of the cabinet itself are of 5/8" oak, front facings are 1½" (if no power equipment is available, softer wood should be used). Weldtex was used to finish the outside. The two top drawers are for storage, the bottom drawer has the controls and power pack. Total cost of cabinet, less labor, came to $35.00. This layout takes nearly one wall of our living room but it is considered a necessary piece of furniture by all members of our household.

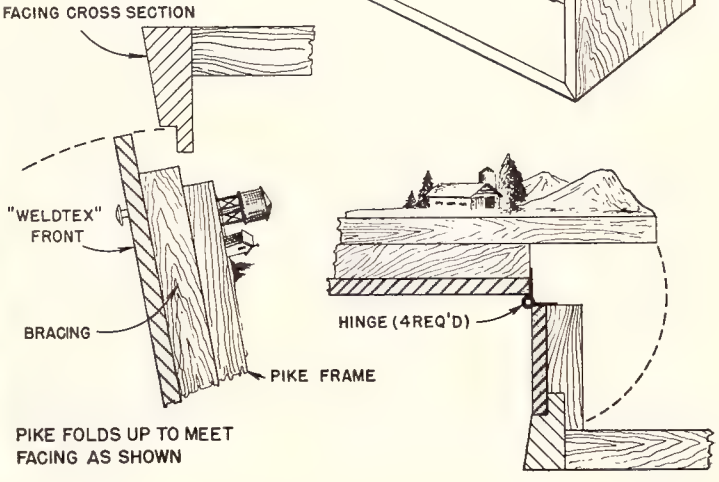





HIDE-AWAY CABINET
CORNERS, LEGS, SIDES, TOP FACING — 5/8" OAK (NATURAL FINISH
DRAWERS, FRAME, BOTTOM BRACING — PINE
FRONT FACING — "WELDTEX" PLYWOOD
KNOBS — BRASS (5 REQUIRED
DRAWERS - STANDARD CONSTRUCTION
POWER PACK DRAWER
KNOCK-OUT PANEL TO GET AT WIRING
HINGE LINE



Bird's eye view of pike. Note choke rod controls and partially finished scenery. Mountains are of paper mache over screen.

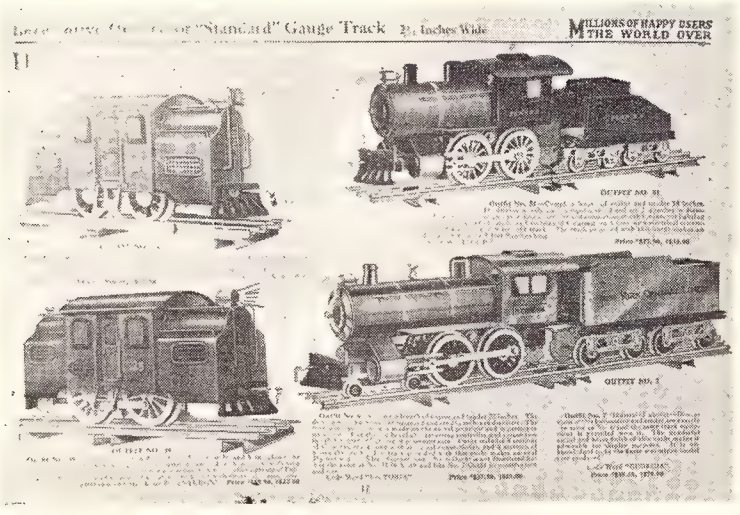


Along the Tinplate Track

with Louis Hertz

ERA OF THE "42"

REMEMBER when you were a boy how you always walked home the long way around at Christmas time so you would pass the hardware store or toy shop? You would pause in front of the big window, your breath vaporizing on the pane, and gaze at the wonders displayed therein. There were sharp shining tools and bright red sleds, but the thing you had really walked out of your way to see was what looked to your eyes like the biggest and finest model locomotive that anyone would ever build. It had eight wheels, and on one side of the cab door it said "New York Central Lines," and on the other side was the big, almost magic numeral, "42."



Lionel last cataloged the No. 42 in 1923. This page from that year's catalog shows its smaller electric type counterparts, the 0-4-0 33 and 38, as well as the No. 51 0-4-0 switcher and 4-4-0 No. 7 brass and nickel steam type. 1923 was also the last year for Lionel steam types until the 390 came out in 1929.

You always hoped it would be running when you got to the store, its nickel plated side rods churning furiously as it hauled its big passenger or freight cars around the track. Sometimes it would just be sitting quietly on its track, giving a profound impression of latent power. And perhaps the kindly storekeeper, seeing the schoolboys congregating outside in the cold, would come over and give it a few turns around the window. In time that engine marked "42" came to be a fixed feature at Christmastime. Then one year it was gone, and there was a newer engine running in the window, but fine as it might be it never quite seemed as good as the No. 42.

Years went by, and time, like a sponge blotted out many memories of youth. But even then, sometimes around December, as you passed where the old store used to be, memories came flooding back, and you would think again of the days when you would stop and feast your eyes on the wonder of a Lionel 42.

The Lionel No. 42 was one of those few particular engines which stand out as landmarks in tinplate development. The manufacturer cataloged it from 1913 through 1923. During that period it bulked large in the minds of many boys as the ultimate in model railroad locomotives. It is not a rare locomotive today—many, many thousands were made. But of course for each boy who owned one there were countless who had to be contented with viewing it in stores, and for each of these there were yet thousands who knew of it only through the literature of the day. In one form or another the No. 42 was pictured on the cover of every full Lionel catalog in those years, although in 1915 and 1916 it was represented in the form of a drawing of the actual prototype New York Central S1 class prominently displaying the number "42" in several places. The No. 42 also appeared in most of the Lionel ads, and on box tops and labels.

Indeed, the 42 era may in some sense be said to have extended still another decade after the engine itself was no longer in production. Until 1928 the introduction to the Lionel catalogs pictured a No. 42 hauling the famous train of twenty cars which Lionel twin motor locomotives were featured as being capable of pulling. And at least as late as 1933, box front labels on some newly produced O gauge sets still pictured the 42. Boys who were interested in trains and scrutinized every detail of the illustrations thus became aware of the 42 long after it had gone out of production, and even to them it became somewhat of a symbol of all the romance associated with a very definite earlier era of model trains.

It should be observed that contrary to what might be expected from the fact that the 42 was the featured Lionel engine of this period, it was by no means the most expensive locomotive in the line. In 1922, the last year the 42 reigned more or less supreme, it retailed in the east for $26.75, and there were no less than four other higher priced Standard gauge locos, the 51, 6, 54, and 7. The 51, 6, and 7 were, however, steam types, which detracted from their popularity in an era that was definitely electric-outline conscious. And the 54 was actually a de luxe version of the 42, mechanically identical, but with its cab made out of polished sheet brass instead of the enameled metal of the 42.

There was never any question in any one's mind though that the 42 was *the* Lionel loco of this period. As befits a monarch, it did not linger long to sadden its friends as sometimes happens with famous models that are surpassed. In 1923 the 42 paralleled the new 402—a number obviously derived from that of its predecessor—and then disappeared from the catalog. Some 42's may have been made later, as is suggested by models with two headlights, automatic couplers, and in colors not generally known to have been used by Lionel prior to 1923 and 1924.

The first 42's, probably made in 1912, were structurally identical with the late No. 1912's, which were also 0-4-4-0's. That is, they used the old style so-called "square body." This designation is often confusing to those not familiar with the actual models, particularly when it is contrasted with the later "rounded body." This does not mean a square cab type as such, or a St. Paul type, as some infer from the second designation. Both types are modeled after the famous New York Central S1 type; the earlier body is made with the joints of the end section square; later types have gentlely rounded contours. The page from the 1915 Lionel catalog showing the old "square body" on the No. 53 and the later "rounded body" on the 42 will make this difference clear to those who have been confused by these terms. Of course, there are other points between the two bodies, notably the half-open ventilators along the upper sides of the end sections of the later bodies.

These body styles were consistent throughout the various size electric type bodies; the "rounded body" of the No. 33 is the same except in size and proportions as the 42. The electric type line in Standard gauge throughout the 42 era always included the 33, 38, 42, and 54. The 53 was also manufactured during

most of this time, and in 1924, one new model using the old body, the No. 50, was introduced.

There were, of course, many minor variations on the No. 42 between 1913 and 1923 but the one big changeover was from one motorized and one dummy truck to a motor in each truck working from a single reverse lever—the famous Lionel "Twin-Motor" feature which has only recently been revived in certain models of the current Lionel line. The core of the twin-motor idea is that both motors are controlled by a single lever or remote control unit. Lionel had previously made trolley cars with a motor in each truck, but each motor had its own separate reverse switch.

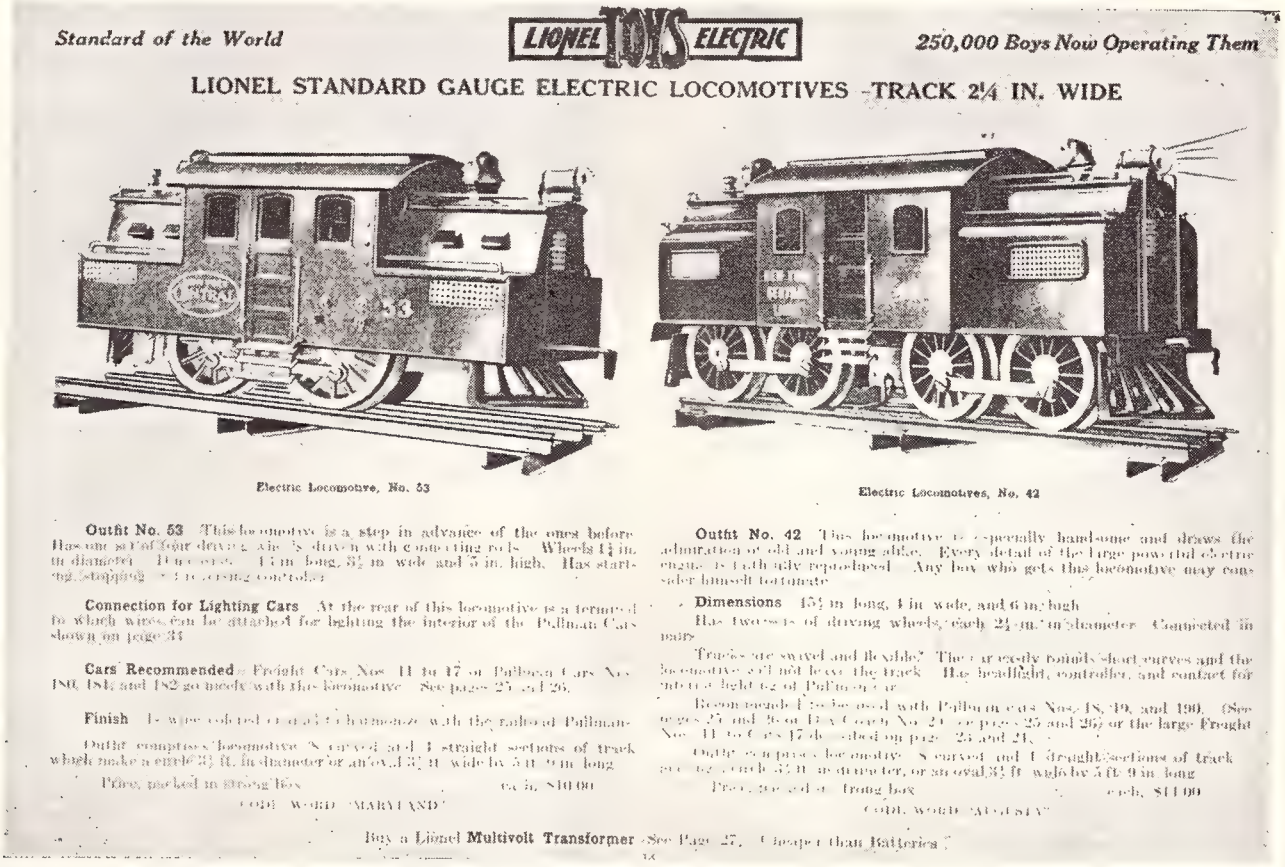
Some years ago, J. Lionel Cowen, the founder of Lionel, related the story of the origin of the twin-motor construction and name. In 1915 the Packard Motor Co. introduced a new twelve cylinder car, which they featured as the "Twin Six." It attracted a great deal of attention and publicity, and provided Mr. Cowen with the thought for adapting the idea and name to use on miniature electric trains. Accordingly, the Lionel "Twin-Motor" construction was evolved and placed in the No. 42 and No. 54 locomotives in 1921. There was a complete changeover—no single motor 42's or 54's were made after the new models went into production. A number of owners of earlier locomotives evidently sent their engines to the factory to be converted into twin-motor models. There is a "square body" 42 in the Lionel collection in their New York showroom fitted with twin motors which has puzzled many who have viewed it. The best information is that this engine was assembled by the factory from available parts in the late 1920's when the nucleus of the present collection was first gathered together. The factory took the oldest 42 body they could find, one of the squared joint type of 1912-13, but either accidently or because there were no dummy trucks available, made it up into a locomotive with twin motors.

I GO right down into the great railroad yards and study the latest styles of locomotives, cars and semaphores. Then I pattern Lionel Electric Trains after them. Buy Lionel trains and you have *real trains*, only smaller in size.
You can buy Lionel trains from your dealer, complete or in single pieces, and think of this—there are so many different kinds of locomotives, passenger cars, freight cars, trolley cars, etc., that there is always something new when you want a change.
Just Like the Big Trains
Oh! You Christmas Man!
Tell father Christmas will be a failure without a Lionel train. Then send for my big, free catalog showing the complete line with *over a hundred pictures*. Mark what you want, give it to father and urge him to order from your Lionel dealer. He *will!*
J. LIONEL COWEN, *Friend of the Boys*
President THE LIONEL MFG. CO. 48B E. 21st St. New York City
LIONEL TOYS ELECTRIC

Lionel projected a drawing of their No. 42 model into a real railroad scene for this 1916 ad. Like most Lionel ads of that period it was written in the first person over the signature of J. Lionel Cowen, "Friend of the Boys." Trolley cars are still featured in this ad.

Lionel advertising through most of the 42 era was much more highly personalized than at a later date. The ads, frequently written in the first person, were invariably signed "J. Lionel Cowen, Friend of the Boys." The 42 was always sure to appear in the ad in one form or another, together with a personal message from Mr. Cowen regarding "My Big Free Catalog" or to the effect that if the local dealer was unable to supply the desired train "I'll ship prepaid on receipt of price." Old time Lionel fans

(*Continued on page* 44)

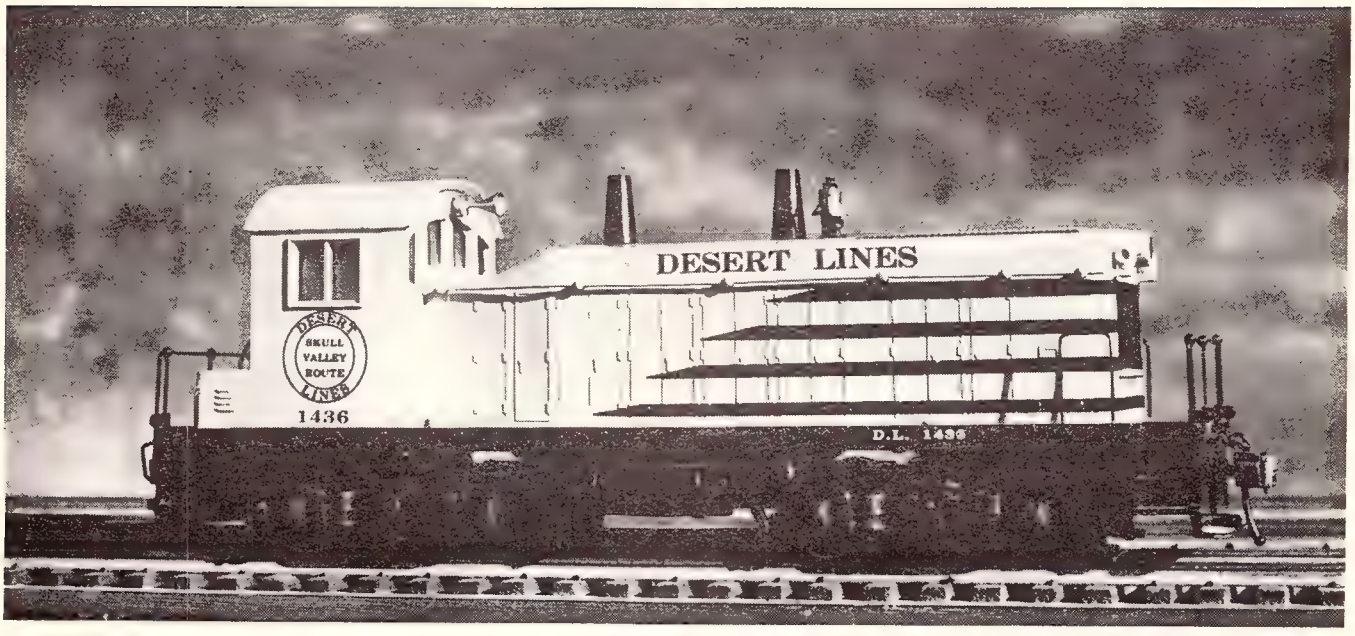

Standard of the World
LIONEL TOYS ELECTRIC
250,000 Boys Now Operating Them
LIONEL STANDARD GAUGE ELECTRIC LOCOMOTIVES -TRACK 2¼ IN. WIDE
Electric Locomotive, No. 53
Electric Locomotives, No. 42
Outfit No. 53 This locomotive is a step in advance of the ones before
Has one set of four driving axles driven with connecting rods. Wheels 1¾ in. in diameter. Locomotive 11 in. long, 5½ in. wide and 5 in. high. Has starting, stopping and reversing controls.
Connection for Lighting Cars At the rear of this locomotive is a terminal to which wires can be attached for lighting the interior of the Pullman Cars shown on page 31.
Cars Recommended Freight Cars Nos. 11 to 17 or Pullman Cars Nos. 180, 181, and 182 go nicely with this locomotive. See pages 25 and 26.
Finish Is wine colored enamel ornamented with the railroad Pullman-
Outfit comprises locomotive, 8 curved and 4 straight sections of track which make a circle 3½ ft. in diameter or an oval 3½ ft. wide by 5 ft. 9 in. long
Price, packed in strong box ea. ch, $10.00
CODE WORD "MARYLAND"
Outfit No. 42 This locomotive is especially handsome and draws the admiration of old and young alike. Every detail of the large powerful electric engine is faithfully reproduced. Any boy who gets this locomotive may consider himself fortunate.
Dimensions 15½ in. long, 4 in. wide, and 6 in. high.
Has two sets of driving wheels, each 2¼ in. in diameter. Connected in pairs.
Trucks are swivel and flexible. They readily handle short curves and the locomotive will not leave the track. Has headlight, controller, and contact for 32 volt electric light car of Pullman car.
Recommended for use with Pullman cars Nos. 18, 19, and 190. (See pages 25 and 26 or the Box Cars No. 21 on page 25 and 26) or the large Freight Cars No. 11 to Cars 17 described on page 25 and 26.
Outfit comprises locomotive, 8 curved and 4 straight sections of track each 27 in. in diameter, or an oval 3½ ft. wide by 5 ft. 9 in. long
Price, packed in strong box each, $14.00
CODE WORD "ALASKA"
Buy a Lionel **Multivolt Transformer** See Page 27. Cheaper than Batteries

"Any boy who gets this locomotive may consider himself fortunate," said the Lionel 1915 catalog of the No. 42. To those who admired it in store windows, it seemed a lot larger than its actual 15½" length. In those days, separate locomotives came complete with an oval of track, the same as a complete train set and $14.00 would set you up in the Standard gauge railroad business with one of the most famous tinplate locos of all time.

Eight Ball Locomotive Works in O gauge. Construction of this small factory was described in the February RMC by the builder, Eric Brunger. The structure, basically of card stock has a weatherbeaten appearance and can be built up at little cost.

Special bridge work on the O gauge, 2-rail layout of William Davis, Washington D. C. This model was made of pine strips and cardstock, single-tracked. Can be readily duplicated in any gauge.

With exception of locomotive, all equipment in this photo was made in the homework shop of Karl Naffin of Cleveland. Car sides and coaling station are of cardstock, station roof is scribed tinfoil.



A diesel switcher, built up from a General Models kit, painted chrome yellow and black. All wheels are powered; and the loco pulls 15 to 20 cars with ease. This O gauge model does yard duty on a pike built by J. E. Andes, Bozeman, Montana. Photo by W. C. Tayloe

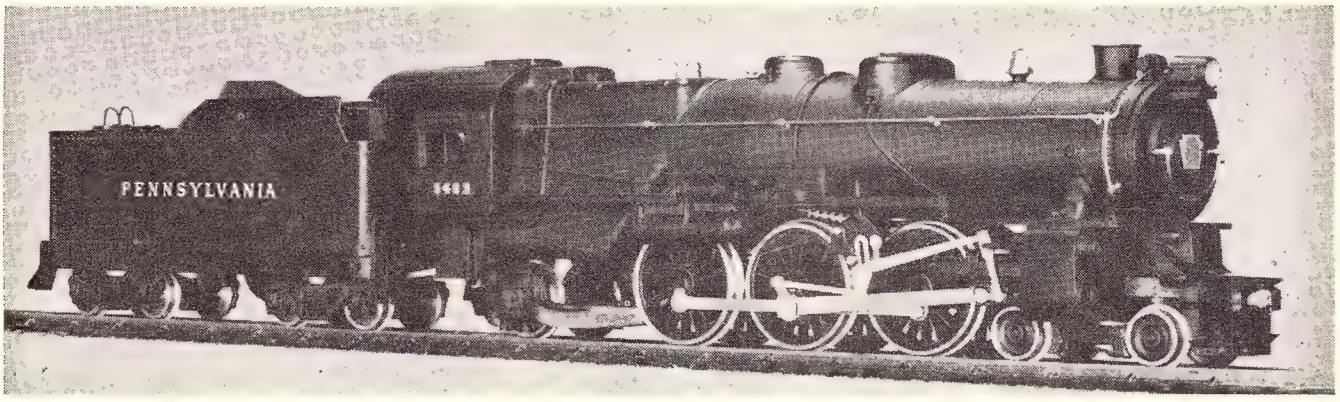
YOUR NABOR'S PIKE

SEND US YOUR PIX FOR $5

WANT FIVE BUCKS?

That's the minimum we pay for photos and captions appearing on this page. Photos are selected on a basis of reader interest and good photography—you are not limited to some super-detailed model so don't be bashful, your photo may be the next to appear on these pages. Please include all pertinent information regarding scale, materials and other interesting facts. Here's a good chance to let your "Nabor" see your work and make some easy money in the bargain. Send material to Picture Editor, Railroad Model Craftsman, Ramsey, N. J. Photos returned on request. Send in yours today.

The morning local, consisting of an express reefer, streamlined combine and two coaches, pulled by a light Pacific, heads into a station while a way freight with a Diesel at the head end waits for a clear track. Scene is photographed on the Sivretta Road, a 6 x 10' HO layout built by Ernest Steen of New York City. Photo by Leo Post



Kit of the Month

Pennsylvania K-4 in HO gauge. A super-detailed model designed for building ease yet accurate realism; can be used for both passenger and freight service. Produced by Penn Lines of Boyertown, Pennsylvania

FEW are the prototype locomotives of a specific design that have had nationwide acceptance by the country's railroads like the Pacific. On the Pennsy, Pacifics have hauled the crack "name" trains with strict schedules to maintain; all types of freight drags; in yard humps —in short as an all-round workhorse. That the Pacific K-4 has turned in a creditable performance consistently is why the PRR had so many built and they probably view with reluctance the passing of the Pacifics as steam gives way to Diesel on many of the PRR divisions.

Almost as remarkable is the entry at long last in the HO field of the first Pennsylvania K-4 to be mass produced at a figure which ten years ago would have been held nigh impossible. At the outset, this kit is an excellent one and its ease of assembly make it pleasurable work.

Some of the features incorporated in this model include a working reverse lever which, when flicked by a finger, operates the radius rods in a most realistic manner. A superdetailed boiler backhead fills a need long sought by the boys who crave detail. Careful painting of same results in a job that is striking. Tender has a water scoop, sprung trucks used by the PRR, and cast brakes on the lead truck add to the overall appearance of this locomotive.

Included in the kit is a small tin of gear lubricant, PRR decals, and a well written easy-to-follow booklet of instructions having exploded views showing where each part and screw goes in place. Inside the box cover there is a picture of the completed model and in the booklet both right and left views of the prototype are shown. This certainly is a step in the right direction; the chance to check model against prototype with a resultant better finished model. Tractive effort and general dimensions are also given. A careful check of all parts prior to assembly and their respective locations will aid in construction.

Flash, the bugaboo on most castings is held to a minimum and particular mention is made as work progresses to file a bit here or there to insure a more perfect fit. It has been the builders general practice to rub a thumb *carefully* (for flash can rip the flesh) over all castings and wherever a rough spot of burr crops up, give it a touch of the file. The removal of all flash required only a few minutes. Two rough spots were encountered and a coarse file promptly took care of that.

The boiler casting is made of a smooth soft metal and responds to filing easily and final polish with steel wool. Wipe the casting clean with a cloth dipped in carbon tetrachloride.

Pilot is attached to main frame by a roundhead self-tapping screw down through the pilot, into the frame. However when the bracket casting (ATC or compressor box) is fastened to the frame, the head of the pilot screw raises this bracket considerably. To correct this I used a flat head ¼" 2-56 screw, tapped and countersunk the hole for same. This seems to make a neater job with the screw flush with the frame and looks better when facing the front of the locomotive. The head of the self-tapping screw could be filed down a trifle if the above method doesn't seem satisfactory to the builder.

The six drivers are oxidized and need a small amount of flash removed from between the spokes. They must be inserted in the frame with all insulated wheels on the locomotives left. It is difficult to determine the insulated side from the non-insulated so free are the drivers of the usual overhang of insulation material. I placed them in the frame and then put the assembly on the rails with a little power applied. A check of the voltmeter promptly indicated which was the insulated side. I've made it a rule once this fact is established to paint a yellow spot on the inside of the insulated driver. I rarely paint the inside of my drivers and it's easy to spot when subsequent removal and replacement become necessary.

To make certain the drivers spin freely, several drops of a good grade clock oil in the bearings will help. These holes are accurately drilled and no difficulty was encountered at this point.

I found one of the holes in the cylinder for the crosshead guide drilled at an angle, however when the guide was inserted it was bent at a position to conform with the other side and the full assembly works perfectly.

Valve Gear Assembly

There are very close clearances in the space between the valve gear and side rods. While it may not be apparent at a casual glance, there are burrs on the side rods and they should be removed with a file, and then smoothed off with emery cloth in a circular motion for better appearance. The heads of the screws on the front drivers should be filed down to about half the thickness to allow necessary clearance.

When the side rods were attached, no bind was evident but this precaution should be taken: roll the mechanism over a smooth surface to make sure every thing is free rolling. Most modelers encounter their greatest difficulty at this point on locomotives and it can play the very duece if not attended to properly and any necessary adjustment made. Enlarging the holes *slightly* in the side rod or rods usually eliminates the gremlin. Too free rods become sloppy and are worse than tight ones.

On the crosshead as it fits into the main rod, an 0-90 screw goes into this part and with constant motion works out. This could be either peened over on the end or a long rivet inserted in its place. Crossheads should slide freely and a bit of filing may be necessary in several spots.

The cylinder block should fit snug and be flat on the recess provided in the main frame. The lead truck has four brass wheels, two of which are insulated from the truck by thin circular plastic washers. The insulated lead truck is placed with the insulated wheels on the left side of loco.

The two washers and coil spring for the lead truck should not bind and one

washer may have to be filed to slide in the underside truck slot.

Assembly of valve gear requires time and patience. It cannot be rushed. It is a jewel of watchmaker-like precision and will pay off if time is given to its construction and the modeler goes strictly "according to the book." A desirable feature is the use of tubular or roll clinch rivets which seem more adaptable and easier to work than the solid type that bend over when struck with a hammer. The Rivetool included in the kit makes this usually tedious job a quick one. Care should be taken to make sure the rivets are not crimped too tightly. A loose fit is preferred above a tight one. Adjustment of the eccentric crank is extremely important and should point just a few degrees from a vertical position. The free rolling of the K-4 depends on the care used in assembling the valve gear and associated parts. It would be wise once again to test roll the entire mechanism.

Motor is a husky Pittman DC-71 with a sturdy worm driving into a Mircarta gear which insures quiet operation. It is easily installed and the screws should be drawn up carefully. You may encounter a burr on the L motor mount but a swipe of the file will take care of that. The motor snugly fits in the recess provided.

The rear truck "goes along for the ride" and mounts into the rear of the main frame with one screw. Should it ride too close to the rails, it can be filed down a bit on the bottom of the truck side. Be careful not to spoil the detail on the truck.

Hand rails are installed to better advantage by following the exploded view plans. Pop valves and whistle are pressed into place provided. When locating the boiler over the mechanism, it should be done carefully; be sure that the slot for the reverse lever is filed out.

When the boiler was fastened in place and current was applied, we were faced with a short. Several pieces of scotch tape placed from the top of the brush holder down over the rear of the motor eliminated this. (The clearance at the top of boiler is quite close.) Finger nail polish on top of boiler would do a similar job no doubt.

The wire from the motor leads through the boiler backhead to the tender and is fastened by wrapping the wire around a screw and driving the screw up into the tender base. A more substantial arrangement such as a jack would seem to give better connection and lessen the fraying of motor wire. I soldered a lug to the wire and then screwed it into the tender bottom.

There were only two places in the entire construction that seemed to give any trouble. The valve gear bound under the running board which is part of the cylinder casting. By filing the underside of running board, the bind was freed. At first I tried shimming up the cylinder block but this threw the "gear" out of line due to being tilted. The second item was the grind encountered when the locomotive went around short radius curves of 24" or less. I had in mind several

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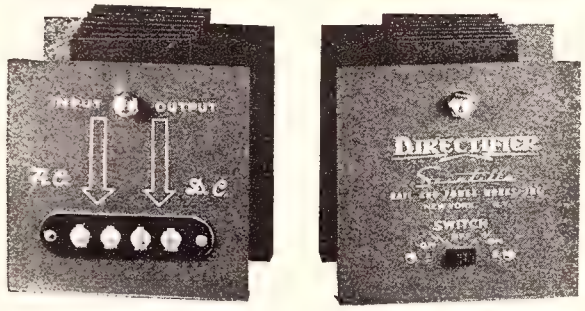

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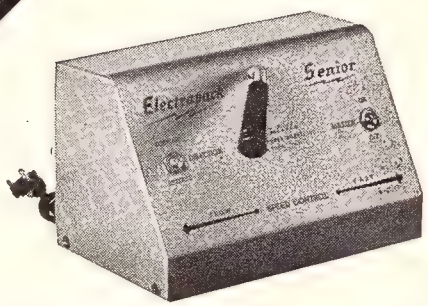

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OH BOY! What we have in store for you

There are many terrific articles earmarked for the coming issues of Railroad Model Craftsman, features that will give you many, many hours of reading and building pleasure. This material covers a wide range of projects, articles which describe the best construction methods with the most economical and available materials.

We're not permitted to tell you the exact subject matter of these articles however material has been selected to cover most building problems in the various phases of railroading.

For instance, there is some swell dope on scenery construction coming your way, based on ideas and materials never before used in modeling. These methods were developed by experts, have been thoroughly tested and have proven excellent for the hobby. Then there's other material covering a variety of right-of-way structures, interesting materials that will fit in with the general theme of most every pike. Suggestions are given so that these structures can be converted to the exact requirements of your own railroad, regardless of size or gauge. You'll like 'em as they were prepared especially for those thousands of individual railroaders throughout the country. There are many articles on locomotive and rolling stock construction, everything from prototype plans through detailing commercial kits. Popularity of these articles is guaranteed. Each piece of equipment described has been thoroughly tested, all the bugs are out—nothing but the good features remain. They'll show you how you can build up your fleets of rolling stock and motive power at fairly small cost yet still have exceptionally well-detailed equipment. Other articles cover equipment maintenance and trouble shooting—what to look for and where!

Another series of articles covers electrical accessories and wiring, prepared by and for railroad modelers. If you carefully follow this series, most of your electrical problems will be eliminated. These forthcoming ideas are time proven and have been written up with the average modeler in mind—in an interesting style, easy-to-understand.

You'll get all this material in the next twelve issues of RMC plus many, many other timely features of real value to every hobbyist. Your complete satisfaction is fully guaranteed. No one can accurately foretell the future so as to assure yourself a bountiful supply of good reading and building material, we would suggest you reserve your copies now. Fill in the handy coupon below and get it in the mails today. By making this reservation you'll save money and guarantee yourself some real building pleasure for the months ahead.

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things that may have caused it and found it was due to the main frame being too thick at one point and the lead truck rubbed just to the rear of the cylinder casting. Almost one eighth inch was filed down in this section to make the loco take the curves. Take a little off at a time; the best method is to make this section level with the rest of the frame in that area.

NOTE: Inspection of another K-4 recently shows that this has been corrected by the Penn Lines and is milled diagonally to offset any bind.

The K-4 will haul a pay load with ease. We had it pulling 22 normal weight freight cars and on another occasion it pulled eight 65' passenger cars and 4 short old time cars. In both instances, this was from a dead stop to full throttle and no slippage was evident. Its ability on a grade is wonderful to watch as this loco has power to spare. The very few adjustments and filing necessary are a credit to the manufacturer. It is a sweet running job and slows to a crawl with ease. It offers the average modeler all the superdetail he could possibly desire and the super-super boys can still get in a few extra parts if they are so inclined.

Paint with a good grade flat black or dark green and this engine will be the envy of the neighborhood.

Changing to Scale

by ROBERT K. MASON

MANY tinplaters have hesitated switching to scale because of the investment of time, effort and money they have in their extensive benchwork, scenery, etc. To switch to either HO or O scale would necessitate the construction of all new work because of the short 13½" or 15" radius tinplate curved and sharp turnouts. Even steep grades would ordinarily be an extra handicap.

But the change-over from O or 027 tinplate to scale can be an easy and interesting project if the tinplater switches to O gauge scale overhead trolley. Here's why: trolley and short interurban cars, steeple dome electric freight motors, etc. will all operate in O gauge on curves down to 10" radius. They're a cinch to operate on the roadbed that carried tinplate track. City turnouts, or O gauge scale "stubby" switches will fit in the areas formerly occupied by Lionel switches. If you are using Gargraves or Scalerite track on your layout, these will take scale wheels, so you wouldn't even have to rip up all your track, just disregard the center third rail (it even has interesting signaling possibilities.)

All you must do is put in scale switches and track that will take scale wheels, put up your overhead and you're in business. Accessories, structures, scenery, etc. will now look even better.

If you operated scale freight cars with tinplate trucks, just take 'em off and replace with scale trucks. If you happen to operate a Minitoy tinplate trolley, remember that the body is to correct scale and a set of Pittman power and trailer trucks, and two Pittman trolley poles will convert it to scale operation.

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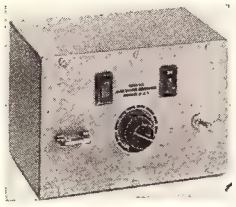

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NEVER ones to "hang crepe", we must, however, face the grim reality of shortages in model railroad materials. Government bans on nonessential use of brass, copper, aluminum, steel and some plastics will hit the entire hobby hard. However, there is no use in putting your pike in mothballs. Construction work can go right on. For instance, perhaps we've been building a lot of cars lately, or been wiring circuits—all to the detriment of our scenery. There's always room for more and better scenicing—and whether you are, one who saves old coffee grounds, matchsticks and hairpins and turns 'em into a beautiful wooded hillside, or likes to buy trees already made up, you won't be much troubled by controls in this department. So c'mon, dry those tears, and knuckle down to modeling that mountain with tunnels and trestles—lay out that township.

New Available Items in TT:

New improved Model Pack, produced by Model Rectifier Co., of Brooklyn, N. Y. This complete unit is designed to operate the Pittman DC 60 and DC 71 motors. As in previous models, it will contain a speed control, reversing switch with center off position, and a resetable circuit breaker—in addition to which the new model is equipped with a neon pilot light, high current master switch and an added three circuit 12 volt DC connection. Model Rectifier produces a cab control unit that fits well into any control panel. This unit is composed of a 40 ohm taper wound rheostat, center off reversing switch and a resetable circuit breaker, built compactly into a baked enamel steel cabinet.

Stone Bridge Piers:

Garrison Struk-Turs, of Washington, D. C. have added two rough stone bridge piers to their superlative line of TT buildings. These piers come in two sizes. The smaller is 3¼ inches high by 2 inches wide; the larger measures 5½ inches at base, tapering to 2 inches at top. The hydrocal used to cast these pieces is easily sawed, so that you can change the height to suit your needs. These piers work perfectly with the Star-Line truss bridge. Two or more of these spans supported on the Garrison piers gives you a really impressive bridge. Priced at 45 cents for the small and 85 cents for the large.

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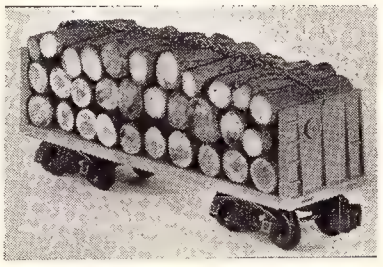

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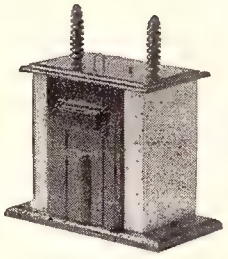

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fruit trees, etc. A beautiful assortment of 20 trees, carefully boxed, is reasonably priced at $1.80.

Refrigerator Cars:

Only recently we heard of complaints concerning scarcity of reefers in TT. Now we have word, (accompanied by sample sides) from Sherman E. Dance of West Englewood, N. J., who certainly needs no introduction to model "Rails," that he is producing about a dozen of them. They will be in complete kit form, less trucks. The samples we have are very clearly printed in prototype colors on sturdy card stock. Some will be scored to represent wood sides, others embossed in simulation of metal sides. Mr. Dance has also produced TT Decals. Forty nine different roads are included. Very clearly printed and accurately scaled, they are sold in units of 15 road names, for 65 cents per unit.

Tunnel Portal:

A cast plaster tunnel portal manufactured by a new entry into the TT field, "Hobbycast by Fry," St. Albans, N. Y. Nicely finished in rough stone, it sells for 90 cents. Mr. Fry tells us he is planning several more items in TT. Welcome!

Locos:

Kemtron Products, Co., of Fresno, Calif., announces a new line of TT locomotives. These are not being sold in kit form at present, but as components and parts, all finely detailed etchings and castings. The list at present includes: Mighty Moe, Alco Switcher, Alco Freight Diesel, A&B Units, Baldwin 0-4-4-0, Baldwin 0-6-6-0. These models are *not* finished, and require skilled forming and soldering.

From the TT Mail Car:

Curtus Boxstrom, of Yakima, Washington writes to say that he has heard "rumors about Allan Products future plans," and what have we heard? Well, at present, Allan has a steel stamped, well detailed freight truck. Future plans include streamlined and Standard 4 wheel trucks, Pullman 6 wheel and Andrews freight car side frames. Shortages allowing, there will be a diecast Box and Reefer kit.

TT Technique:

Ballasting: Easiest way we've found is to take your ballast (a mixture of Sportco cinder fill and sand is good) and mix it with dry Casco glue—three quarters ballast to one quarter glue. Mix well and sift onto roadbed (a tea strainer is handy here). Brush off excess and spray with water. When it dries you'll have a really good ballasting job.

Next time you visit a hobby shop, look over the ship model fittings. You'll find much that you can use on your pike—ladders, railings (very good for those old fashioned porches) and a good many other items that will just fit into your plans.

Till next month, then . . . Write in your ideas, complaints, or what have you . . .

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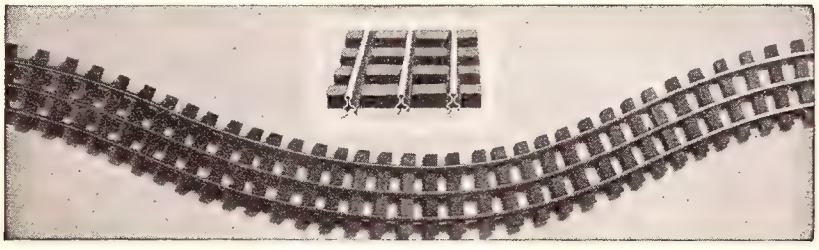

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The Scrap Box

If you know of any ways of utilizing "scrap" or "junk" on a model railroad, tell us and our readers about it; we will pay one dollar for each suggestion.

I advise purchasing your soldering iron from one of the standard varieties offered by large mail order establishments. Their customer service departments can furnish new copper tips as you wear them out, and often even new heating elements. I know I have saved buying many new irons over the past several years by simply buying replacement parts . . . *Ralph T. Olsen*

PIECES of thin sheet steel for construction purposes may be obtained from an old eightday clock spring. It is too hard to work, but may be annealed by heating to a dull red in a furnace or over a gas flame and allowing to cool. The frames of the clock will provide a good deal of brass—the holes can usually be filled with solder. The axles of the clock furnish short lengths of drill-rod . . . *J. E. Dica*

A postal scale, borrowed from the office for a week-end, will enable you to weigh all your cars. I found that mine weighed from five ounces to eight ounces, all except for one three ounce flat car which was constantly derailing. I added linotype slugs under the floor and brought it up to the average weight and found that it kept the rails much better. Open top cars can have heavy loads inserted and of course box cars can be loaded inside with any convenient weight. I used some empty toothpaste tubes in one hopper! . . . *G. S. Coole*

MY railroad has only one steam engine left among a stud of diesels so I did not feel that large coaling facilities were required. I use a Dynamodel coal loader which sits by the track and supposedly lifts coal from a trackside pike up and into the tender . . . *T. M. Anderson*

FOR cheap and plentiful 1/16" dowelling, buy some swab sticks at your drugstore. They are handy for fences, poles, pipes, etc . . . *Alex L. Chase*

TO label wires, mark designation on a small slip of card or paper and squeeze between the ends of a U of transparent cellophane tape which has been looped around the wire to be named. This saves time in trouble shooting and revisions of wiring . . . *H. J. Crane*

IF you use this suggestion. I'll use the dollar to buy some plexiglass. In a recent issue of RMC, someone

said camphor makes good blocks of ice for icing platforms. I don't agree because camphor will disappear after a time. He also said that wax was good. I again disagree because wax will melt or get out of shape on hot days.

Here is my idea; first obtain a sheet of plexiglass about ¼" thick (O gauge) and cut it on a bandsaw into strips ½" wide, then cut the strips into blocks one inch long. Now get a fine file and sandpaper (fine) and roughen the sides and ends of blocks until they are completed. Then take some "water glass" and make pools under the blocks of "ice" to get the effect that the ice is melting . . . *F. P. Schmitt, Jamaica, N.Y.*

BY experience in stripping, A. C. Riddington should know that scotch tape will sometimes take the paint off! For the same purpose, masking or drafting tape will serve as a guide and when removed will leave all paint intact . . . *Paul Bob, Buffalo 8, N.Y.*

FOR those who own or plan to own a Mantua Coal Hopper, here is a suggestion to add realism and efficiency to your coal chutes. I cut off the "spring handles" and the four "catch-posts" for them and mounted a small sturdy wire across each pair of chute hatches, slightly protruding from the sides of the chutes. From the center of each wire rod I ran a spring which hookd to a loop thoroughly glued to the center beam. This enables me to open the chutes more readily and makes possible the automatic unloading of coal . . .

R. K. Harshfield, Arlington, Va.

THE plastic container used to hold ten "Gem" single edge razor blades can be outlined in India Ink to resemble a refrigerator for freight shipments. It can also be painted to resemble a soft drink dispenser found in passenger stations. The Red arrow used to dispense blades makes an excellent sign post marker . . . *Sgt. C. W. DeLeuze Camp Rucker, Ala.*

I always thought it impossible to have a river, below track level, on a table top layout like mine. By accident I discovered that the ½" Homasote board used for the top could be gouged out to a depth of ¼". Start the cut with a knife, but try to tear the top layers off as much as possible. This gives a *roughish* surface which, when painted green, blue, brown with fleckings of white, makes an excellent river. If your track is on roadbed, it is about ½" above the water level (in HO) so bridges can be used even on a table top empire. A word of caution—thinning the homasote this way weakens it so don't put any strain on that section. Extra pieces of wood nailed under the table will take up the stress . . . *Tom Leaming, Phila.*

I make miniature track torpedos for my O gauge line from toy pistol "caps" which I borrow from *my* Hopalong Cassidy when he isn't looking. I fasten a tiny hinge of Scotch tape to the back of the cap and fasten it to the rail with the "butt" of the hinge facing the direction the train will come. These torpedos go off with a startling bang.

J. E. Braun, St. Louis, Mo.

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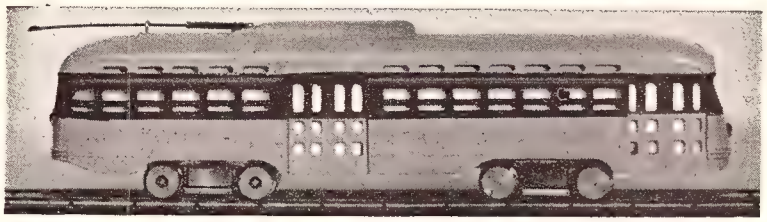

This HO gauge model of a P.C.C. streamlined trolley consists of but four parts: body, pole, plastic window insert and chassis with motor and trailing truck mounted and wired. It can be assembled by turning up two screws in the floor, ready to run in less than five minutes.

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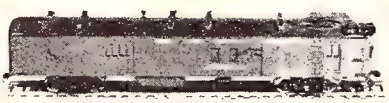

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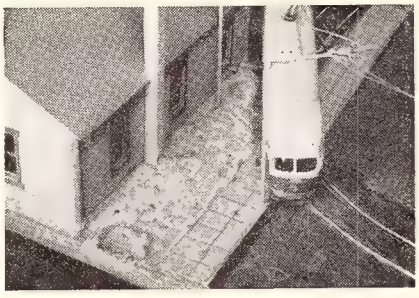
The photo shows a Penna. Scale Models HO gauge P. C. C. trolley on a portion of a layout built specially to demonstrate the cars. The line pole looks to be well back from the track, but as the car speeds around the six inch radius curve, it clears the pole by little more than a *scale* twelve inches. If the front end of the car were not tapered, the pole would have to be several scale feet further from the track. Moral: if the prototype of your model trolleys did not have tapered ends, keep your poles well back on curves. The best way to determine this is to push your actual car along the track as you spot the locations for your line poles. Similar situations are met with cars passing on double track curves.

The double overhead system just discernable in the photo was to eliminate wire-frogs at the passing tracks. While



wire-frogs can be made to work well, they were deemed an unnecessary hazard to smooth operation on an exhibition pike.—*Bill Schopp*

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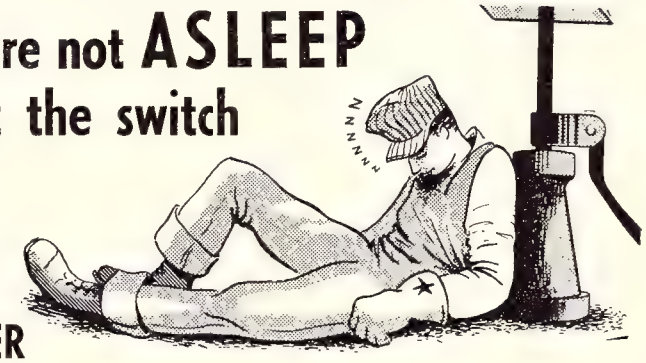

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It is our business to know track and we are continually experimenting on improvements. When a better material than brass is available, it will be used in TRACKMASTER products. If, due to the National Emergency, we are forced to use a substitute, we will change over . . . but only as a wartime substitute. When restrictions are again lifted, we will return to brass unless we can offer something better. We will not use an inferior material simply because it is cheaper to manufacture.

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An Editorial on EDITORIALS

by

BOB PEARE

A prominent Editor once said that Editorials are sometimes a menace to public interest because they reflect a lazy mind trying to fill space or they serve as a means to a selfish end.

Could the Editorial which appeared in a recent issue of a model railroad magazine be one of these swivel chair opinions? Why should such a magazine suddenly switch its support from brass rail to steel coincidental with Federal rationing of brass? If steel is later rationed, are they going to write another Editorial to the effect that they suddenly had a vision that **spaghetti** or some other non-rationed material is far superior to both brass and steel?

Why not be fair and rational. If the brass used in rail is needed in our national preparedness program, we will all, modeler and manufacturer alike, gladly use the next best non-essential substitute. But, is it necessary to lie to ourselves, to try to kid our fellow rails into the belief that brass never was any good simply because it suddenly became scarce?

Manufacturers went through this same experience in World War II. They substituted steel for brass and aluminum for steel; then when the fighting ended **they returned to the use of brass.** Why? Because brass has been proven, by all standards, to be the best metal for model rails.

Let's not be hypocritical about this situation. When we are forced to use a substitute we will, but we will call it a substitute until we have proven beyond a doubt that it is superior to Brass.

It is not our policy to try to foist inferior material on our customers because it is cheaper to produce. TRACKMASTER products will always embrace the very best materials available.

Bob Peare

ELECTRICITY and your model railroad

by JOHN NIXON Part Two

LET'S push the ideas we discussed last month just a bit further. The thing to remember is that a battery or generator is used to push electrical charges through a piece of wire. The flow of charges constitute a current, and an electromotive force (EMF) is the thing that pushes them around, just like pressure pushes water through pipes.

Now a generator can take on many forms—anything from what's inside your local power station to the innocent little flashlight battery. But there are two *types* of generators: one that pushes one way only, and one that pushes first one way and then the other. These give rise to Direct Currents (sometimes called continuous) and on the other hand Alternating Currents. But the difference between them at this stage in the game is only what has just been said. Ohm's Law still applies for both Alternating Current (AC) and Direct Current (DC).

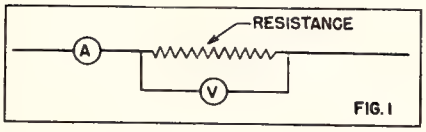


FIG. 1

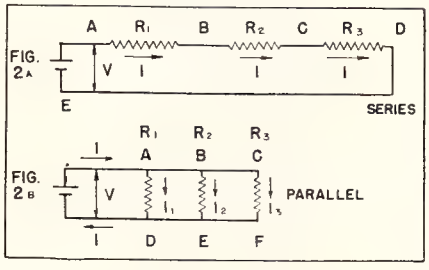
To round off this talk about general properties of electricity, we should mention *Power*. Suppose we take a resistance, and put V volts across it, and in doing so drive 1 amps. through it (Fig. 1). You know what happens, the resistance gets hot and dissipates an amount of power by heat radiation. This power is P=VI. Power is measured in watts.

Example: A resistance has 12 volts across it and carries a current of 3 amps. What is (a) the power dissipated? (b) the value of the resistance? The power is obviously 12 x 3 or 36 watts. To find the resistance, we invoke Ohm's Law in the form R=V/I=12/3 or 4 ohms.

As you can see, since the voltage and current are fixed by the resistance value, we can get many expressions for the power. Recall that V=IR, and the expression for the power P=VI can be dabbled with: $P=VI=I^2R=V^2/R$.

For instance, in the last example, the power could well have been found using $P=I^2R=(3)^2 \times 4$ or 36 watts as before. The last one, V^2/R gives the same answer too.

Well, where's all this getting us? One answer is that this will help you pick your power supply for your pike. Power supplies are usually rated as to their voltage and their power output. The power output determines the size of the supply (and so its cost). One can't successfully run a power supply at greater than its rated power output—the thing gets hot if you do, and this is liable to melt the insulation.



Before we take a particular example, let me mention two types of circuits. They are respectively *series* circuits and *parallel* circuits. These are drawn in Figure 2. Notice the essential differences. In the series circuit, all the current

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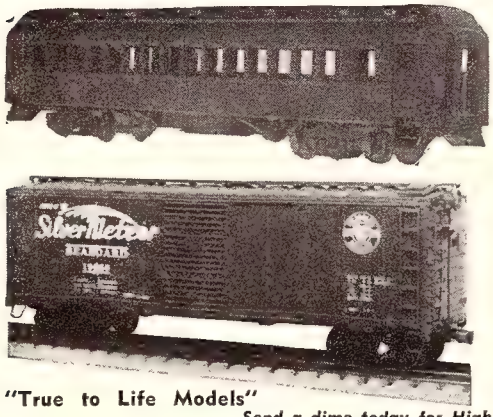

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from the battery passes through *all* the resistances, but the voltage splits up, so that the voltage from A to B is less than the output of the battery (V volts). Likewise, the voltage from B to C and the voltage from C to D. Of course there is *no* voltage from D to E because there is no resistance from D to E against which the current can push.

In the parallel circuit, there is no voltage from A to B, B to C, F to E or D to E. So the same voltage exists across AD as does across BE and CF. The current though does split—part going from the battery through R_1, part through R_2 and part through R_3.

Let's summarize. In a series, all current passes through all resistances. The voltage splits up. That is, $V = V_{AB} + V_{BG} + V_{CD}$ and $I = I_1 = I_2 = I_3$. In parallel, the same voltage exists across all resistances. The current splits up: $V = V_{AD} = V_{BE} = V_{CF}$ and $I = I_1 + I_2 + I_3$.

Well, suppose you take out several resistors, call them R1, R2 and R3, etc. (definite values) and you connect them to a battery which will deliver an output voltage of V. What current will pass through each resistor, and what current will pass from the battery? Case 1. Series Connection. It turns out that the equivalent resistance is found by adding the component resistances. This means that the effective resistance, R= R1+R2+R3 etc. The current drawn from the battery is I=V/(R1+R2+R3 +etc.) amps. This current passes through each resistance. Case II. Parallel Connection. In this case, the equivalent resistance is more difficult. It is found by the formula: I/R=I/R1+ I/R2+I/R3 etc.

Let's take a specific example. Let RI= 10 ohms, R2=5 ohms, R3=2 ohms. Let the battery voltage be 12 volts. Series Connection: Effective Resistance equals 10 plus 5 plus 2 or 17 ohms. Current= V/R=12/17 amps. of .7 amps.

The power drawn from the battery is VI or 12 x .7 watts or 8.4 watts. The power dissipated in #2 resistor is I^2R or $(.7)^2$ x 5 watts or 2.45 watts. The voltage across #3 resistor is IR or .7 x 2 volts or 1.4 volts.

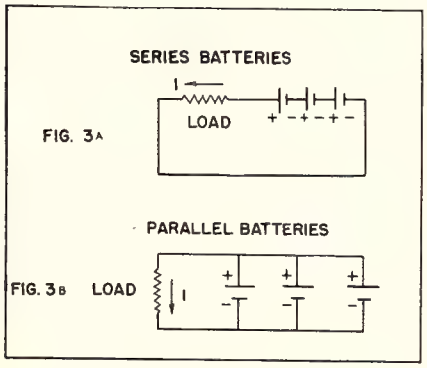
In Parallel Connection: I/R.eff.= $I/R_1 + I/R_2 + I/R_3$ or 1/10 plus 1/5 plus ½ or .8. This gives the effective resistance at 1/.8 or 1.24 ohms. The current from battery is V/R of 12/1.25 or 9.6 amps. Power from battery is VI or 115.2 watts. Power in #1 resistor is $(V_{AD})^2/RI$ or $(12)^2/10$ or 14.4 watts. Current in #1 resistor is VAD/R; or 12/10 or 1.2 amps. See how it goes?

Parallel circuits are widely used in most applications mainly because the failure in one arm does not stop the current flowing in the other branches. Whereas in series circuits, if one resistor burns out. the whole circuit quits. Recall the Christmas tree lamps that *all* go out. This of course makes it difficult to pick out the one that's at fault. The big use for series circuits in pike work is in signalling (relays)—but we'll have

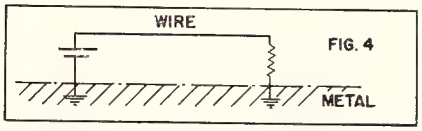
more to say about that in due course—and in splitting voltage. For example, four three volt bulbs in series will work very well on twelve volts.

Batteries too can be arranged in series or parallel, but it isn't a good idea to put them in parallel unless they are of the same voltage. And when it comes to fastening AC generators in series or parallel, another factor must be taken into account. Remember that AC generators push and pull. Well you must be careful to arrange that all the generators are pushing at once and pulling at the same time too. Otherwise you'll have essentially a short circuit and you're liable to lose generators and cash. This problem is called "phasing" and its usually difficult and like many difficult problems is best left alone.

The big advantage in connecting batteries in series is that the voltages are added, provided you connect the negative terminal of one to the positive of the other and so on.



In parallel connections, all the positive terminals are connected together and likewise all the negative terminals, giving the same voltage output but a higher current—hence higher power. These two forms are shown in Fig. 3. When series batteries are used, be sure that the total current is not too great for one of the batteries.



Lastly, you've seen that I've always used two wires from the battery banks. It is usual, when a huge stretch of metal is used in the layout to use the metal as one of these wires. This is called grounding, and usually but not always the negative side of the battery is connected to ground, and so only one wire is needed. Figure 4 shows a battery connected to a load using a ground and a wire. The non-insulated rail serves as a very fine ground.

And with that it might be a good idea to leave electricity for a bit and bring up some ideas on magnetism. Surprisingly enough, the two are very nearly identical, but a lot of people don't manage to remember this. So next month the topic before the house will be magnetism.

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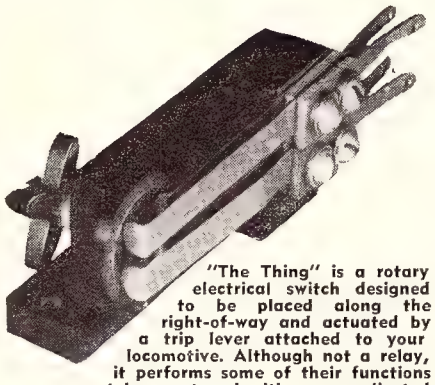

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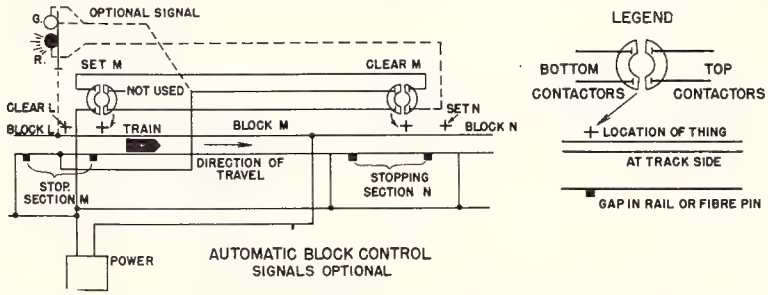

AUTOMATIC TRAIN CONTROL can easily be established on your model pike, using "The Thing" with or without trackside signals. The drawing shows one typical block, M, which requires two units. Notice that the block is entirely self-contained as to train control, so that you may control one block at a time as your needs require. "The Thing," to set block M, is installed at the entrance to the block. As trip on locomotive moves it around a quarter turn, power is cut off from "stopping section M" behind the train. As train turns "the thing" to clear block M at extreme end of "stopping section N," "Stopping section M" again gets power and any train there is freed to proceed. Notice that if train is held in "stopping section N" by a train in block N, "The Thing" to clear block M is not turned and any following train is held in "stopping section M." Any train held there does not free stopping section for block L, and so on, thus preventing rear end collisions with trains held by the train control.

Drawing shows hook-up for travel in one direction only. If train proceeds against the usual direction of travel, it will not be protected. Signals shown are optional. Voltage of signal bulbs must be same as track voltage. While drawing is shown for two-rail track, the same diagram may be utilized for either inside or outside third rail.

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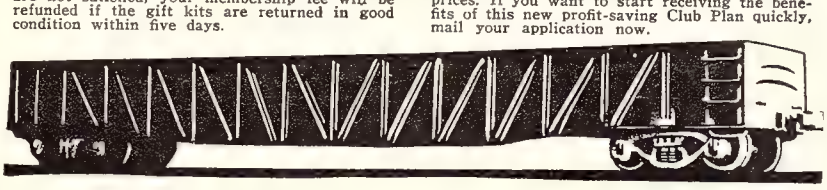

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AND LAYOUT DOCTOR ANSWERS

This Department is for the benefit of all readers. Questions will be answered through these pages or direct by mail by one of the country's leading model railroad authorities. If you have any building kinks of your own, send them in.

Loco Operation Impaired

I have just assembled an 0-4-0 switcher kit, but find that I have to loosen the retainer plate to get the engine to operate. As soon as I screw the plate down tight, the engine will not run. What should I do? . . . *R. Bates.*

ANSWER: There is probably some slight burr that prevents the axle or axles from seating themselves all the way up in the bearing. Or if there are separate bearings, something keeps them from seating properly in the slots in the frame. A few minutes *careful* work with a small round file should fix your trouble once you have located it.

If you don't want to do this, try inserting strips of paper or cellophane tape between the retaining plate and the frame.

Home Built Switchwork

WOULD greatly appreciate your publishing an article on making switches. Nearly all types of model railroad equipment are scarce here in Canada because of import restrictions, but I have managed to obtain a hundred feet of duraluminum rail for my S gauge railroad. Now however I find I cannot attach my carefully filed switch points to the throw-bars. Have tried using my electric soldering iron and ordinary radio solder, but they will not hold after pressure is exerted. I would also like to know how to rig up some sort of contact points to connect point and stock rail electrically without having to press the two together too much . . . *L. P. Albers*

ANSWER: On making switches, we suggest you look up the article on building a narrow gauge-standard gauge turnout in the Feb. '51 RMC. This will give you a lot of ideas, although the switch in question is much more complex than you want to build; hence your job will be simpler. This same article also contained information on one type of contact points, although most modelers have them in the form of relay type blades attached to their switch motors. Bear in mind, however, that if the point and stock rail does not make good physical contact, likely the two don't make good electrical contact either.

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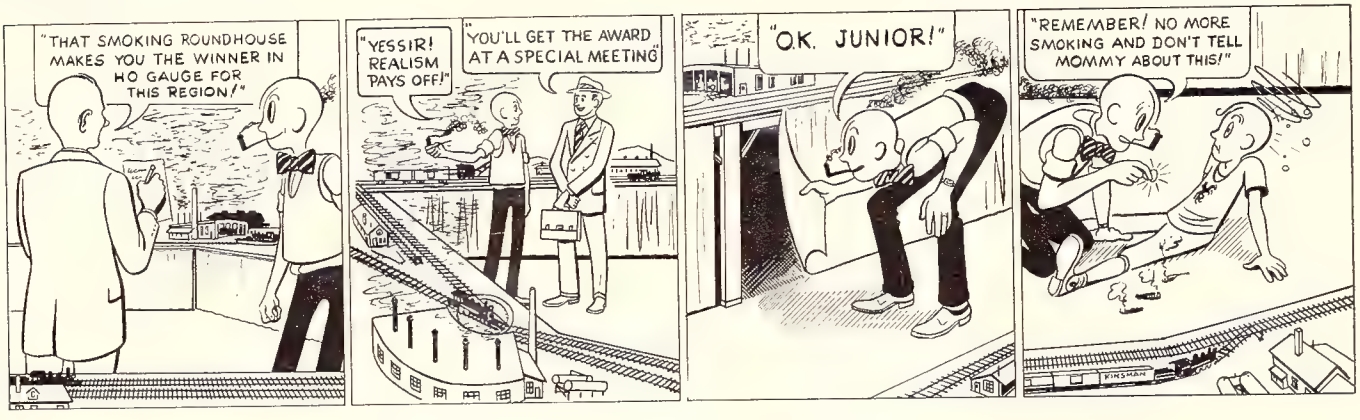
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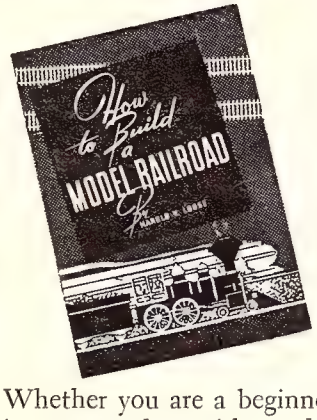

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both parts to be soldered must then be aluminum. You may be able to attach your point to the throw-bar with tiny screws, 00-90 or 0-80 thread. Run down through the base of the rail into a tapped hole in the throw-bar.

TT Trolley Operation

IS it possible to operate TT gauge trolley cars from overhead wiring? *R. Duff*

ANSWER: It certainly is possible, but to date we know of no one who has even tried it. I'd suggest starting out with an HO gauge trolley pole and wire no finer than #24. If you're clever, you may be able to make up a TT trolley pole later. You will apparently build your own cars for no trolleys are on the market for TT. At this writing we have not seen the power truck for the HP TT gauge MU car, but it may be that it can be used in small trolleys as well as in heavy MU-type interurbans. Of course even in a four wheeled dinky car, but I'm assuming you want to run eight-wheelers.

TT trolleys should be a natural for the man with so small space, since they would combine the space saving characteristics of trolleys and TT. Parts for making short radius #3 turnouts are available in TT too.

Rheostat Location

ON some wiring diagrams I see the rheostat located between the reverse switch and the track while on others it is between reverse switch and power pack. Which is right? . . . *M. Heim*

ANSWER: Either one will work, but I think it is preferable to have the speed controlling rheostat between power supply and reverse switch. The principle advantage is that you can then use one rheostat to control one or more sections which are separately reversible, an economical move in any case.

Constant Loco Speed

I have a 4-4-2 Atlantic type HO gauge loco which speeds up and *slows down* while coming *down* my five percent grades, especially while running at slow speed. I did find that if I build up the top of the trailing truck with masking tape to reduce space between truck and

underside of frame, the performance is improved. However, this causes it to labor too much going UP the grade. Can you give me any ideas? . . . *N. D. Carr*

ANSWER: Sounds to me like your engine had too much weight on the rear drivers. This might be due to faulty weight distribution (try adding weight in front of boiler it there is room), or too much spring in the support of the pilot truck which raises the front end up slightly. I would first remove both front and rear trucks and run the loco with just its four drivers on the rail. If this eliminates the trouble, then it must be the springing of the pilot truck; if it doesn't, then it is weight distribution. Another possibility is that you have not a gradual enough vertical curve at start and end of grade so that the engine is "hungup" with one set of drivers only bearing on the rail.

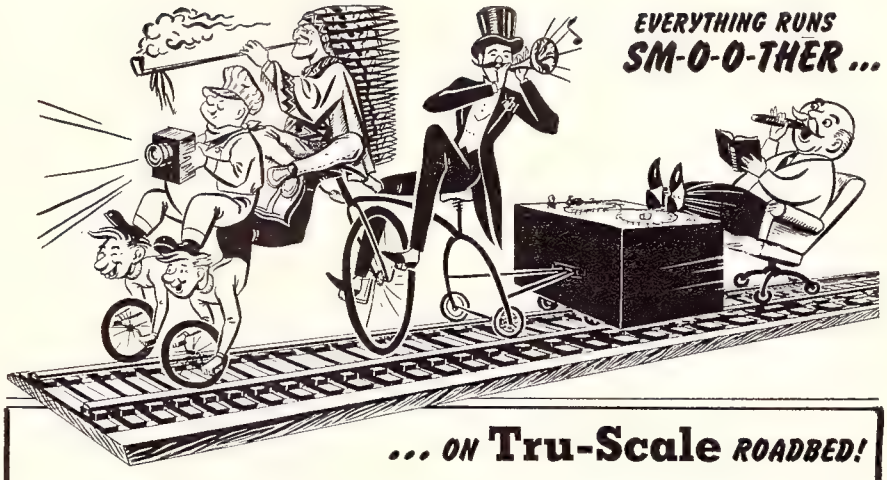
Correct Type of Paint

WOULD you advise my using one of the special model railroad paints in all my model work? One of my friends advises me to use 5 & 10 cent store paint, but he is not a model builder and I hesitate to ruin my models . . . *Jack Grove*

ANSWER: There is no yes or no to your question. I have seen some fine models painted with "5 & 10" paint, but unless you know what you are doing you are likely to have to *remove* the paint and start over. The dangers of using regular paint on models are: (1) it may have to be thinned to keep from obscuring detail such as rivets, frames, etc. (2) it is relatively slow drying; I have had some that was still tacky after two weeks. You can add dryer, but too much is as bad as too little. (3) it may not stick to brass (4) the exact colors such as tuscan red, olive green, or box car red may not be easily had and (5) it may show brush marks.

On the other hand, model railroad paint is compounded especially for the purpose. It will stick to clean brass, will not obscure detail, dries quickly, stocked in right colors and dries (unless otherwise stated) to a realistic dull finish. For the small amount you require in most model work, it is worth the difference in price to get just what you want. Also it is extremely worth while to use good brushes for all model work.

For painting large expanses of plaster or other scenery, where the base drinks up paint like a towel, the cheapest paint will do. Thin liberally with turpentine. After a basic brown or green coat has been put on you can add the finishing touches with model railroad paint.



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Ed. Van Leer

Along the Tinplate Track

(Continued from page 25)

will also remember Mr. Cowen's personally conducted tour of his "Fun Factory" which was a big feature of the catalogs around the World War I period. "Come On-Boys! I'll show you why Lionel trains are better," headlined the first page of the catalog, along with Mr. Cowen's photograph.

Then to the delight of readers, every step in tinplate train production was covered with special photographs: cars in the "flat" and in various stages of assembly, punch presses, rail-making machines, and coil-winding machines, the testing bench and other wonders. There were all kinds of technical details of Lionel construction, including such parts as a hand reverse switch broken down into all its separate components. There were also "horrible example" photographs of competitive make equipment, thinly retouched and disguised. One such photograph showed a Lionel locomotive with steel body and an Ives cast-iron body locomotive falling off a table, At the bottom of the photgraph the Lionel locomotive could be seen lying on its side, unhurt, while the "cast iron locomotive" had smashed into the metallic equivalent of kindling wood.

Or here's a typical technical description from the 1916 catalog: "Commutator (13)—One of the two most vital parts of a motor. Made of a solid bronze turning, with insulating material placed between the section (10) and the center through which the armature shaft passes, held together with heavy fibre washers (12), and turned absolutely true when rigid on the armature shaft (11)." In 1923 there were four pages of this sort of thing in the Lionel Catalog, as every detail of the O gauge motor, the regular Standard motor, the new Standard "Super" motor, and the twin-motor construction were thorougly gone into. Less and less of these technical details appeared as the 1920's drew to a close, but in recent years there has been a trend toward including them again. One thing is certain, the boys who read their catalogs in the 42 era and studied every detail of construction—a point on which Lionel was always very strong—had a much better idea of how their trains worked than many of those who got their trains in the mid-1930's when little or nothing was said as to how things were made and why.

Another interesting point which is manifested as the literature of the 42 era is studied is the very definite leaning toward electric outlines on the part of Lionel at that time, even though they were making several steam types as well. "Big Railroad Men say: 'Steam Locomotive Must Go' " the *New York Times* was quoted. Of course, Lionel referred to electric power as a source, and did not particularly care whether a customer bought a steam or electric outline. When the Lionel catalog said "Buy Electric engines," they were referring as much to buying an electrically powered model, opposed to a clockwork unit or a live steamer, as to external appearances. However, most people believed in going all the way and being consistent. If a model ran by electricity it should look like an electric locomotive, or so a majority reasoned in those days. The catalog stressed electric types, and reflected popular tastes by doing so. Gradually the steam type faded out. Lionel made no steam types between 1923 and 1929 when the revival set in. The only listing of a steam type in those years was the inclusion of a No. 5 Standard gauge switcher in the big complete railroad outfit.

One cannot help pondering. Is the diesel type going to repeat in the next few years what the electric type did as the 42 era came in? Will we someday look back on the 1950's in tinplate and refer to the period by the number of one of Lionel's modern diesels?

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Just about every known hobby will be on display at the third annual California Hobby Show to be held March 30 through April 8 at the Shrine Convention Hall in Los Angeles. Two floors of the huge hall will be jammed with everything on hobbies: from intricate machines which revolve as many as 600 moveable parts without producing anything more tangible than personal satisfaction to the builder to complete model railroad layouts and exhibits of model railroad equipment.

The model railroad display will include equipment in five different gauges in actual operation; a completely detailed HO pike; and five different scales of steam locomotives with a live steam layout in operation. The display will be under the direction of the Pacific Coast Region of the NMRA and various model railroad clubs.

Colorful Reefers for TT

The comment in the January issue inquiring about the "where-abouts" of TT gauge reefers has not been in vain. As a matter of fact, while that article was in our presses for publication, one manufacturer had already begun production on that very item. We are informed that these sides being printed by Sherman Dance of W. Englewood, N.J. are actually under way and there are plenty

more on the drawing boards. They should be completed and on the market in just a couple of months. A feature of the car sides is that each car will be available in two or more different numbers; thus, several of the same car may appear in any one train and the car numbers will be different.

The reefer sides will include both the colorful, old timers and a series of the modern refrigerator cars. We know that the familiar M.D.T. has largely been concluded for the old time, double sheathed, white car; the double sheathed orange car; and the new, all steel job bearing both the M.D.T. and N.Y.C. heralds. Each type is available with different car numbers.

Completed models that we have seen (Western Fruit Express with GN herald and a Northern Refrigerator Car Co. 36 footer bearing the slogan, "Apples

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from Yakima Valley) are beautiful jobs worthy of a place on every TT pike. The sides will be available separately or in a complete kit, less trucks. Exact delivery date will be announced shortly. For further details,

Refer to A4151. See page 49

Short Radius Turnouts

The short radius HO gauge switches, made by Guild Design & Mfg. Co. of Philadelphia, have a #2½ frog which has an angle of about 22½ degrees, and a radius of curvature of about six inches. The lead (point to frog distance) is stretched out, however, to 3¾" to secure better operation.

Such short radius switches have long been in demand for steam lines operating in restricted areas as well as for trolley layouts.

They are stapled to heavy gauge fibre tie-strip, with two ties left long on either side of the tie-rod for mounting a switch stand if desired. The tie-rod itself is metal, loosely rivetted to the short piece connecting the switch points. The points themselves are not pivoted in any way, which gives smooth passage of cars, so important on these sharp curves. This tends to spring the points over toward "straight."

Overall length of the switches is 7½" but for use in congested trackwork, they could be cut down to 5½". Two switches combined to make a crossover on standard 2" track centers would have their frogs about 2" apart measured parallel to the tracks. Such a crossover could be placed in less than 10" overall length.

Model Power Source in HO

Lightning Hobbies of Pottstown, Pa. have introduced two pieces of right-of-way equipment which are certain to prove popular with all modelers in HO gauge. Both are scale replicas of power plants in kit form with all parts complete and precut. The first is a power sub-station which includes two deep-grooved transformers, glass bead insulators, wire mesh fence and base. The other kit, a more elaborate model, is complete with a miniature power plant and stack, transformers, fence and pre-cut parts for the overhead assembly.

Both kits are complete with assembly instructions and are most realistic when "wired" up with a fine black thread. The two can be used on the same layout very effectively. For further details,

Refer to A4251. See page 49

Don't miss the World Hobby Show at the Coliseum in Chicago March 30 through April 8. Model Railroading will play a dominant role!

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Just on the market is a new formula rail-cleaning liquid available in hobby stores in eight ounce bottles. Removal of dirt from track is a necessity for smooth operation for any but the heaviest locomotives. A wiping with this liquid, either via a rail-cleaning car or on a rag, should permit even a four wheeled tank switcher to make a stall-less trip the first time. Known as "Model Pike Track Cleaner," this material removes all slush, dirt, rust and oxides from rail with but little effort. Works equally well on brass, steel, aluminum or tinplate track. Simply dampen a cloth with this liquid and rub over rail head, all dirt and oxides will disappear.

It can also be used to advantage on such small metallic parts as drivers, valve gear, and trucks. Cleaning these small parts and switch points, etc. can best be done with a fine paint brush.

Plastic Structure Kits

Here's a line of structure kits that will lend variety to your model railroad and give realistic scenic efforts. Miniature Fabricators Co. of Youngstown, Ohio have introduced several structures in HO gauge made of a heavy plastic; the individual plastic parts can be joined by the use of acetone producing a solid assembly. Included is an operating Gantry Crane, a suspension bridge with an overall length of 42", a power plant with detailed interior and an elaborate steel mill. For complete details,

Refer to A4351. See page 49.

Miniature Lumber Yard

Featured in the HO structure kits produced by Ayres Scale models is a completely detailed lumber yard including a lumber rack, office and 210 pieces of miniature lumber. The kit has scale embossed siding on both buildings, cast windows and door, and interior details for office. A most interesting trackside structure that can be expanded (if you so desire) with scrap materials to include bulk oil or coal facilities. Scraps of scale lumber left over from other projects can be piled about the yard and enclosed with a cyclone fence made of old screening. For further details of this kit,

Refer to A4451. See page 49.

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Refer to A4551. See page 49.

Composite Gondola

Newest model to be offered by the Southern Kit Club is a Composite Gondola in HO Gauge. Sides are die cast with good clean detail and all other material with exception of trucks is provided for a complete model together with clear assembly instructions. Kit includes all wood parts precision cut, dummy couplers, grab irons, brake gear and underbody details. Produces a scale replica of a Southern Ry prototype. For complete details and illustrated literature,

Refer to A4651. See page 49.

HO Factory Kit

E. Suydam & Co. of Pasadena, Calif. have introduced an HO factory kit which incorporates corrugated tinplate sides and roof. This tinplate material is .010" thick and actually has corrugated impressions, not the usual scribed or printed markings. This detail is most realistic when viewed from any normal distance. Other detail includes acetate printed window glass, sliding doors, interior partitions and roof accessories. Overall dimensions approximately 4 x 10". With the addition of a loading platform, this is an ideal right-of-way structure that can be placed close to viewers. For details,

Refer to A4751. See page 49.

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Shop Notes

HERE'S one that's cheap and easy. Use those little pieces of rail to make queen posts for the old time cars. Saw off a 1/16" slice and file until smooth. Turn the car upside down and glue on 1/16" square wood for queen post base. Make the rods and then set the posts on the base. The posts are then soldered to rods glue applied to ends of rods and base of post and assembly glued in position. Paint when finished . . .
E. A. Espindale, Watsonville, Calif.

SOME railroad modelers use screen numbering tacks to number their switches, but a much cheaper way is to cut numbers from calendars. These have the advantage of being available in many sizes. The red numbers for Sunday's and Holidays may be used for special purposes. I mount the entire calendar sheet on light cardboard, then cut out what I need . . . *J. Murgati, Bklyn., N.Y.*

IN building HO old-time passenger cars, I have found that a convenient way of making truss rods is to use split bamboo. I have had some hanging around from model airplane building days. Bamboo is far better than thread since it is sturdy and much more easy to install than wire for it can be cemented solidly. It can be split into varying thicknesses easily, and has fine flexibility Queenposts can also be made of bamboo and turnbuckles from bits of cardboard cemented in the appropriate place . . . *W. E. Steingraus, Greencastle, Ind.*

UNDOUBTEDLY there are many uses for tinfoil on a model railroad, but one that occurred to me was in building a model railroad diner. The shiny, almost mirror-like effect on the front of some of the newer diners can be simulatd by evenly cut squares of tinfoil carefully cemented in place . . .
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RAILROAD MODEL CRAFTSMAN
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WANTED: Copy of "Miniature Railroad Service and Repair Manual" by Louis Hertz, published 1939. Box 936, c/o Railroad Model Craftsman, Ramsey, N. J.

DETAILED CABOOSE

(Continued from page 15)

water tank. A bit of wire on the bottom and another snip cemented on the top serve as faucet and cover handle respectively. This water tank should be cemented to the car side so that it will be in the correct position when the side is applied.

In fact, at this point, the stove side should be fastened to the car body with cement and beheaded bank pins. Now, flatten out a bit of tin foil and bend it into an L shape and cement it to the floor and side next to the washroom. This represents the protective metal sheathing which keeps the car from catching fire should loose coals escape from the stove. The stove, which should first be painted a very dull black, is cemented to the metal sheathing. A piece of heavy wire, about #18, should be fastened to the top of the stove to provide a flue. This is best done by cementing it into a shallow hole drilled into the stove.

The coal box is simply four squares of vertically scribed card cemented together to form a box and fastened to the floor next to the stove. The short bunk may then be cemented into position, trimming its length if necessary.

Thus having completed the "stove" side, let us turn our attention next to the other side, which is somewhat simpler. First, cement the top and front of the tool box together, allowing the former to overhang slightly, and fit the assembly between lockers and end wall. A snip of wire and two tiny picese of brass can serve as handle and hinges.

Now cement and pin the remaining car side in position, being careful to see that the lockers and tool box fit up against it tightly. The long bunk may now be placed. The conductor's desk is simply a square of somewhat thicker card fastened to the wall at one end and supported by a single leg (the small end of a toothpick has just the right taper). A little two-shelf rack made of tiny pieces of thin card, is cemented to the wall near the car end and holds a supply of extra lantern globes. The latter are represented by red, green and white Indian beads. The sliding panels are cemented to the walls next to each center window with thin strips of wood serving as slides.

Other minor details in my car are the oil lantern on the wall above the desk and the hand lantern on the floor. I made mine of Indian beads cemented to turned brass bases (and top, in the case of the hand lantern) but pin heads could easily be used for bases with little, if any, loss of realism. The air gauge and conductor's valve are made of a brass turning and bits of wire,—of course, a pin head again could substitute for the turning.

Well, there you have it,—a distinctive and finely detailed car that will probably spend more time decorating the mantelpiece than the rear end of a freight. But I am sure that you will find this car to be at home in either place.

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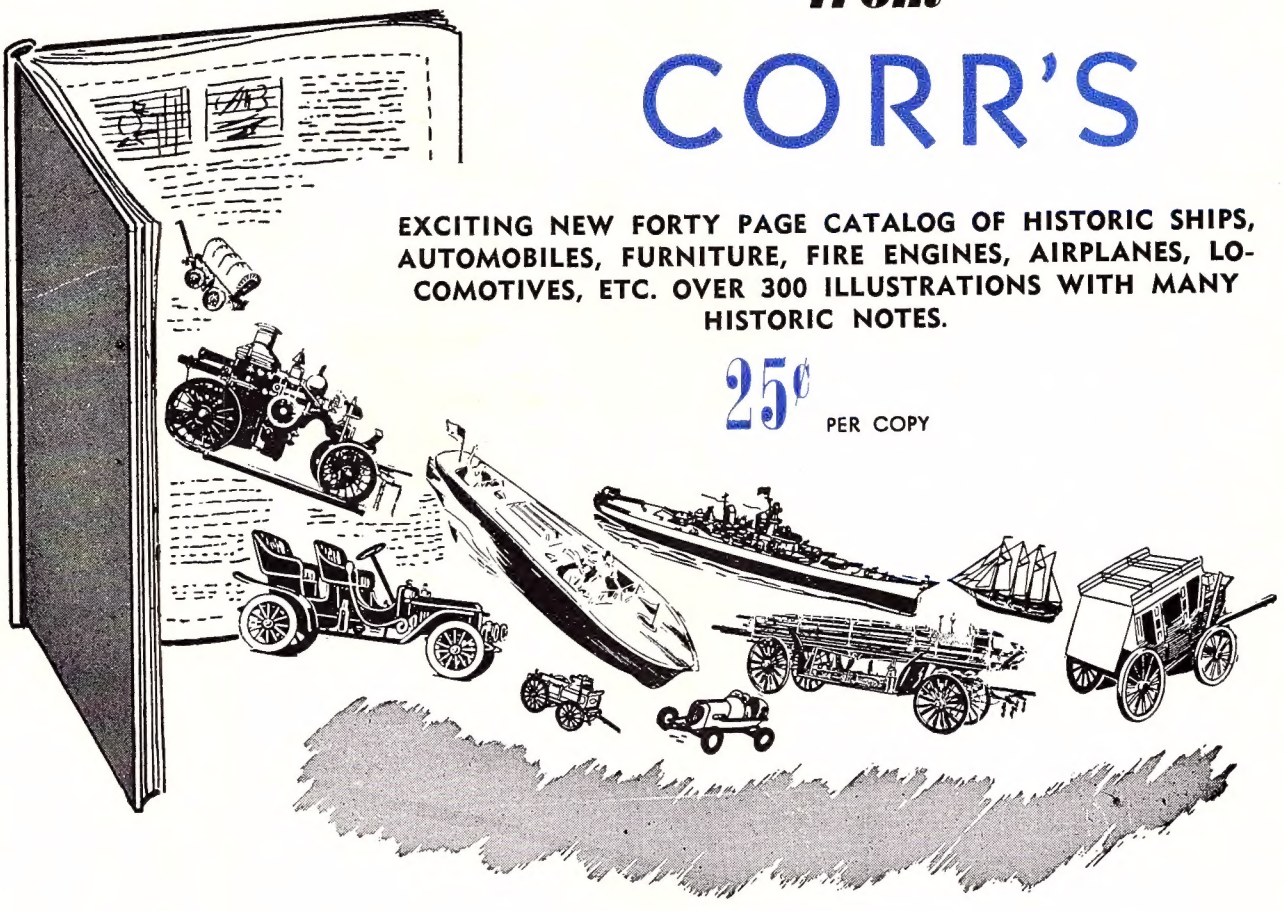

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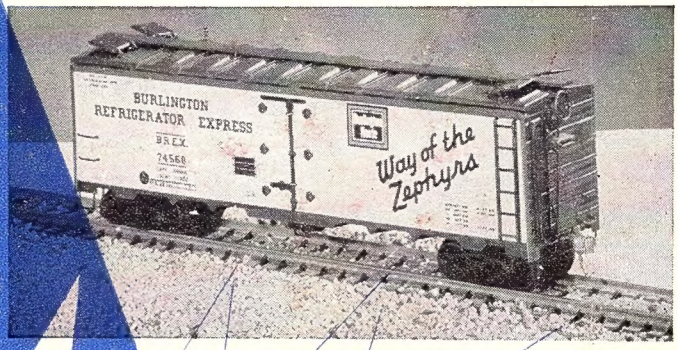

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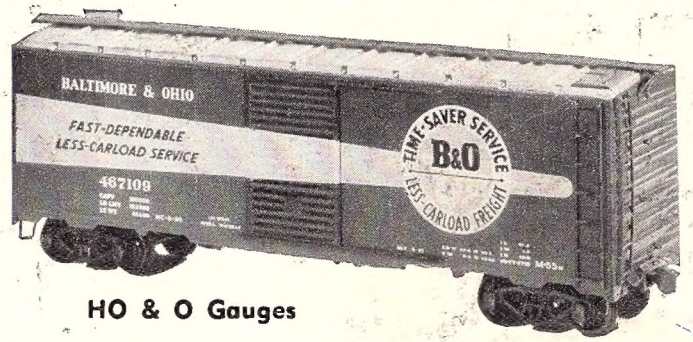

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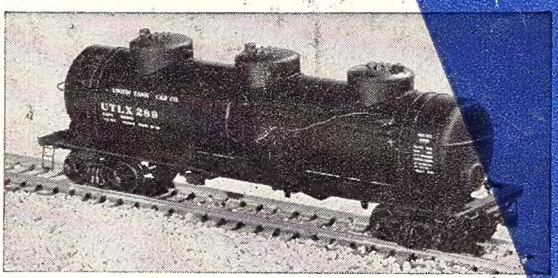

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